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Methods for Identifying Health Research Gaps, Needs, and Priorities

A Scoping Review

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About This Report

Over the past two decades, the U.S. Department of Defense (DoD) has invested unparalleled resources into developing effective treatments for military-related psychological health conditions. Systematic reviews are a key component of the knowledge translation process and function to translate the available research into evidence-based health care guidelines that promote optimal clinical care. Although a few government agencies, including the Department of Veterans Affairs and the Agency for Healthcare Research and Quality, have established evidence synthesis centers, there is no similar center within DoD that focuses exclusively on psychological health issues. Thus, the Southern California Evidence-Based Practice Center, housed at the RAND Corporation, has been awarded a three-year contract to synthesize research on psychological health interventions important to military populations.

This is a scoping review of methods used for identifying health research gaps, needs, and priorities. The review will be of interest to health policymakers and practitioners.

The research reported here was completed in July 2020 and underwent security review with the sponsor and the Defense Office of Prepublication and Security Review before public release.

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Contents

Figure and Tables

Figure

Tables

Summary

Well-defined, systematic, and transparent processes to identify health research gaps, needs, and priorities are vital to ensuring that available funds target areas with the greatest potential for impact. Such processes can be complex, and different methods require varying levels of effort and resources.

The purpose of this scoping review is to characterize approaches used in identifying health research gaps, needs, and priorities. For approaches that were linked to potential or actual research funding decisionmaking, we also documented impact evaluations of the exercise (if applicable), study replications, and challenges or limitations associated with conducting the exercises.

This scoping review will address the following review questions:

1. What are the characteristics of methods to identify research gaps, establish research needs, and determine research priorities?
2. To what extent have methods been used by research funding organizations and what was the impact?

Methods

For this scoping review, we searched research databases for published studies (MEDLINE, PsycINFO, and the Web of Science) and screened bibliographies of existing reviews for relevant studies. To be included in our review, studies had to describe the method and procedures used for identifying research gaps, needs, or priorities of health research. *Research gaps* are areas or topics in which insufficient evidence leads to the inability to draw a conclusion for a given question. *Research needs* are knowledge gaps that significantly inhibit the decisionmaking ability of key stakeholders, who are end users of research, such as patients, clinicians, and policymakers. *Research priorities* are research gaps or needs that are ordered by selected criteria (e.g., potential value, importance to stakeholders). Given the definition of research needs as research gaps that are important to address from the vantage point of end users, we categorized studies that involved nonresearchers in the identification of research gaps as aims related to establishing research needs. Correspondingly, studies that included researchers only in the identification of research gaps were categorized as aims related to identifying research gaps.[1]

In addition, we reviewed procedures of top health research funding organizations in and outside North America. We selected organizations based on a prior study that provided

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[1] In the case of studies involving the identification of research gaps, researchers are considered stakeholders, although there is a lack of consensus on whether researchers should be regarded as stakeholders (O'Haire et al., 2011).

information on annual spending for health research (Viergever and Hendriks, 2016). For the selected organizations, we searched the organizational websites for information on their approaches. Furthermore, we conducted a targeted MEDLINE search for articles published on the selected organizations, as well as Google and Google Scholar searches.

Two independent reviewers screened titles and abstracts of retrieved citations and full-text publications. Full-text publications were screened against detailed eligibility criteria. We extracted broad descriptions of methods used to identify health research gaps, needs, and priorities. For studies in which exercises were conducted or supported by research funding organizations, we abstracted the methods and processes involved in research gap, needs, or prioritization exercises in detail and documented the impact of the exercise (if applicable), study replications, and challenges or limitations associated with conducting the exercises.

Results

We screened a total of 10,832 titles and abstracts and excluded 8,309 titles. We conducted full-text screening for 2,524 publications. In total, 362 studies met our inclusion criteria, of which 167 were identified as being associated with funding decisionmaking.

Methods Used to Identify Research Gaps, Establish Research Needs, and Determine Research Priorities

Of the 362 publications that met inclusion criteria, 185 were not explicitly linked to actual or potential funding decisionmaking. Nearly one-half of these publications focused either on research prioritization alone (28 percent; $N = 51$) or on a combination of research needs and priorities (22 percent; $N = 40$). Another 17 percent ($N = 32$) focused on a combination of research gaps and priorities, 14 percent ($N = 25$) on research gaps only, and 12 percent ($N = 23$) on research needs only. Small proportions of publications focused on a combination of research gaps, needs, and priorities (4 percent; $N = 8$) and a combination of research gaps and needs (3 percent; $N = 6$).

Of the 362 publications that met inclusion criteria, 167 were linked to actual or potential funding decisionmaking (i.e., explicit mention of approaches being used or supported by research funding organizations). A small proportion involved single stand-alone exercises. Specifically, these focused on the identification of research *gaps only* (7 percent), research *needs only* (6 percent), or *priorities only* (14 percent). The most common gap identification method was the convening of some type of workshop or conference in which expert presentations and discussions were held to identify research gaps. Of the ten studies centered on the establishment of research needs only, most (seven) used methods involving workshops, meetings, or conferences; two studies used qualitative methods, quantitative methods, literature reviews, and

reviews of in-progress data.[2] Of the 23 studies that involved the determination of research priorities only, most used methods consisting of either workshops, meetings, and conferences (57 percent) or quantitative methods (48 percent); others used literature reviews (22 percent), consensus methods (13 percent), reviews of source materials (13 percent), and qualitative methods (9 percent).

The majority of studies involved a combination of multiple exercises (72 percent). Of the 167 studies that were linked to funding decisionmaking, more than one-half involved the identification of both research *needs* and *priorities* (88 studies). Within this set of 88 studies that focused on both research needs and priorities, the most common method was that of the James Lind Alliance (JLA) Priority Setting Partnership (53 percent). Among the 88 studies of research needs and priorities, additional strategies included quantitative methods (25 percent); qualitative methods (16 percent); workshops, meetings, and conferences (17 percent); consensus methods (13 percent); the Child Health and Nutrition Research Initiative (CHNRI) approach (7 percent); literature reviews (8 percent); source material reviews (6 percent); reviews of in-progress data (7 percent); stakeholder consultation (3 percent); use of the Essential National Health Research framework (1 percent); and evidence mapping (1 percent).

Of the 167 studies that were linked to funding decisionmaking, 14 percent (24 studies) involved the identification of both research *gaps* and *priorities*. Nearly one-half of the 24 studies used quantitative methods and reviews of source materials. This was followed by workshop and conferences (21 percent), literature reviews (29 percent), the CHNRI process (25 percent), consensus methods (17 percent), qualitative methods (17 percent), framework tools (13 percent), and reviews of in-progress data (13 percent).

A small portion of the remaining studies linked to funding decisionmaking focused on the identification of both research *gaps* and *needs* (3 percent) or on the identification of research *gaps*, *needs*, and *priorities* (3 percent). The five research *gaps* and *needs* studies used workshops, meetings, or conferences (100 percent); quantitative methods (40 percent); literature reviews (40 percent); review source materials (40 percent); framework tools (20 percent); qualitative methods (20 percent); consensus methods (20 percent); stakeholder consultation (20 percent); and reviews of in-progress data (20 percent). The five research *gaps*, *needs*, and *priorities* studies all used quantitative methods and reviews of source materials. Other methods included qualitative methods ($N = 4$); literature reviews ($N = 3$); and workshops, meetings, or conferences ($N = 4$). Fewer than one-half reported methods involving consensus methods ($N = 3$), stakeholder consultation ($N = 2$), and reviews of in-progress data ($N = 1$).

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[2] Studies often used more than one method. Percentages reflect the proportion of total studies under a given category (e.g., research needs only) that used a particular method.

Extent of Use and Impacts of These Methods

Across all 167 studies linked to funding decisions, the top three most frequently used methods were the convening of workshops, meetings, or conferences (37 percent); quantitative methods (32 percent); and the JLA approach (28 percent). This was followed by methods involving literature reviews (17 percent), qualitative methods (17 percent), consensus methods (13 percent), and reviews of source materials (15 percent). Some engaged in the CHNRI process (7 percent), reviews of in-progress data (7 percent), stakeholder consultation (4 percent), framework tools (4 percent), Essential National Health Research (1 percent), systematic reviews (1 percent), and evidence mapping (1 percent).

The criterion most widely applied across studies to establish health research gaps, needs, or priorities was the importance to stakeholders (72 percent). One-third (29 percent) considered the potential value or the feasibility as guiding criteria (18 percent). Burden of disease (9 percent), addressing inequities (8 percent), costs (6 percent), alignment with organization's mission (3 percent), and patient centeredness (2 percent) were adopted as criteria to a lesser extent across studies.

With respect to the methods used to make the final determination of health research gaps, needs, or priorities, 51 percent of studies used methods related to voting, ranking, or rating. Consensus methods (32 percent) and open-ended listing (31 percent) were adopted by one-third of studies. Only a few (7 percent) studies used expert-determined methods to make final determinations.

Researchers constituted one of the largest stakeholder groups, with representation across more than one-half of the studies (66 percent), and were second only to clinicians (69 percent) across studies. Stakeholders representing patients and the public were involved in two-thirds (59 percent) of the studies. A smaller proportion included policymakers (20 percent), funders (13 percent), product makers (8 percent), payers (5 percent), and purchasers (2 percent) as stakeholders. Stakeholder organizations were the predominant vehicle through which nearly one-half of the studies (51 percent) used to identify stakeholders. One-quarter of studies (26 percent) relied on purposive sampling and some (11 percent) on convenience sampling. Few (9 percent) used snowball sampling to identify stakeholders.

A small portion of studies—seven of the 167 (4 percent)—reported some type of impact evaluation. Over one-third of studies (37 percent) used methods that had been replicated in other studies. Of the studies replicating methods that had been reported previously, most (73 percent) involved the JLA approach. The CHNRI process approach was the next most frequently replicated method (17 percent). Three of the replication studies adopted the World Café approach. Two studies had implemented methods that had been used in prior studies.

Our gray literature search on top health research funding organizations inside and outside North America revealed that very little specific information is available on the methods, criteria,

and stakeholder involvement in the research prioritization process. Information was more often available on the criteria used to review and select applications for research funding.

Challenges and Limitations Associated with Approaches to Identifying Research Gaps, Establishing Research Needs, and Determining Research Priorities

More than one-half of the studies (97 of 167) reported challenges or limitations associated with the health research gap, needs, or prioritization exercises. Challenges encountered while conducting such exercises included difficulties in making final determinations when topics were too broad or numerous; hindrances in achieving consensus, particularly when the diversity of stakeholder experiences was great; inconsistencies in how methods were used; and methods that were time-intensive or affected by time constraints. The limitations associated with health research gap, needs, and prioritization exercises largely concerned the representativeness of the findings. The composition of stakeholders and the level of stakeholder participation were the two main factors that studies described as limiting the representativeness of findings. The studies also reported that certain facets of the composition of stakeholders might have biased or compromised the representativeness of results (e.g., exclusion of a particular stakeholder group, unequal representation across stakeholder groups, small numbers of stakeholders). Studies also noted that variations in the level of stakeholder participation potentially influenced the representativeness of exercise results (e.g., no, low, or differential responses by certain stakeholder groups; lack of sustained engagement throughout the entire exercise across all stakeholder groups).

Conclusion

This scoping review has been designed to guide those conducting exercises to identify health research gaps, needs, and priorities, which may help accelerate progress toward validating methods that ensure the effective targeting of funds to meet the greatest areas of need and to maximize impact. Approaches to identifying health research gaps, needs, and priorities are heterogeneous with respect to the methods and processes used. Given the limited reporting on evaluations of the impact of health research gap, needs, and priority identification methods in the literature, the effectiveness of various approaches is unknown. The lack of consensus on conceptual frameworks, taxonomy, and evaluation methods is impeding progress toward building a needed evidence base.

Acknowledgments

Abbreviations

ADHD	attention deficit hyperactivity disorder
AHRQ	Agency for Healthcare Research and Quality
ANNA	American Nephrology Nurses' Association
BAPRAS	British Association of Plastic, Reconstructive and Aesthetic Surgeons
BCBSA	Blue Cross and Blue Shield Association
BMGF	Bill and Melinda Gates Foundation
CAIRR	Cooperative Alliance for Interventional Radiology Research
CAM	Combined Approach Matrix
CARRA	Childhood Arthritis and Rheumatology Research Alliance
CDC	Centers for Disease Control and Prevention
CDMRP	Congressionally Directed Medical Research Programs
CEO	chief executive officer
CER	comparative effectiveness research
CHNRI	Child Health and Nutrition Research Initiative
CIHR	Canadian Institutes of Health Research
CIRSE	Cardiovascular and Interventional Radiology Society of Europe
CKD	chronic kidney disease
COHRED	Council on Health Research for Development
DoD	U.S. Department of Defense
EC	European Commission
ENHR	Essential National Health Research
EPC	Evidence-Based Practice Center
FDA	Food and Drug Administration
HHMI	Howard Hughes Medical Institute
HIV	human immunodeficiency virus
HTA	health technology assessment
IC	institutes and centers
IQR	interquartile ranking
JLA	James Lind Alliance
MHS	Military Health System
MRC	Medical Research Council (United Kingdom)
N/A	not available or applicable
NGO	nongovernmental organization
NHMRC	National Health and Medical Research Council (Australia)
NICE	National Institute for Health and Care Excellence
NIH	National Institutes of Health
NIHR	National Institute for Health Research
NLM	U.S. National Library of Medicine

PHCoE   Psychological Health Center of Excellence
PICO   population, intervention, comparison, outcomes
PICOTS   population, intervention, comparison, outcomes, timeframe, setting[3]
PSP   Priority Setting Partnership
PTSD   posttraumatic stress disorder
RESPIRE   NIHR Global Health Research Unit in Respiratory Health
SME   subject-matter expert
SVS   Society for Vascular Surgery
TCR   targeted call for research
TEC   Technical Evaluation Center
TEPP   Technical Expert and Patient Panel
TWG   technical working group
UK   United Kingdom
WHO   World Health Organization

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[3] Variations do not necessarily include all letters.

1. Introduction

Globally, an estimated 1.1 billion individuals are affected by mental or substance use disorders; the associated costs in lost productivity are expected to increase to $16 trillion by 2030 (Patel et al., 2018; Vos et al., 2017). The costs and burdens of mental health conditions are vast and continue to grow, yet this area of research is perpetually underfunded relative to other health conditions (Christensen et al., 2011; Kingdon, 2006). The field of psychological health research has been characterized as broad and fragmented and having limited resources, it can be significantly challenging to coordinate and prioritize research to maximize effectiveness (Pollitt et al., 2016).

Identifying research gaps, needs, and priorities is critical to ensuring that available funds target the areas with the greatest potential impact (Chalkidou et al., 2009; Yoshida, 2016). As defined in the literature (Robinson, Saldanha, and Mckoy, 2011a; Saldanha et al., 2013), *research gaps* are areas or topics in which insufficient evidence prevents drawing a conclusion for a given question. Research gaps are not necessarily synonymous with *research needs*, which are knowledge gaps that significantly inhibit the decisionmaking ability of key stakeholders—such end users of research as patients, clinicians, and policymakers. The selection of *research priorities* is often necessary when it is not possible to pursue all identified research gaps or needs because of resource constraints.

Well-defined, systematic, and transparent processes to identify health research gaps, needs, and priorities are vital to ensuring that available funds target areas with the greatest potential for impact. Such processes can be complex; use of particular frameworks, tools, or methods does not appear to be consistent or widespread; and there does not appear to be a general consensus on best practices (Robinson, Saldanha, and Mckoy, 2011a; Viergever, Terry, and Matsoso, 2010). In a review covering published literature between 2001 and 2009, Robinson, Akinyede, Dutta, et al., 2013, noted the variety of organizing principles applied in gap identification methods for systematic reviews: key questions; a care pathway; a population, intervention, comparison, outcomes (PICO) framework; topic areas; and a decision tree. Correspondingly, a review limited to a PubMed database search covering the 2001–2014 period documented a wide variety of health research prioritization methods, including the Child Health and Nutrition Research Initiative (CHNRI), Delphi, James Lind Alliance (JLA), Combined Approach Matrix (CAM), and Essential National Health Research (ENHR) (Yoshida, 2016). In an update to the Robinson, Saldanha, and Mckoy, 2011b, review, Carey, Yon, et al., 2012, reviewed the literature between 2010 and 2011 and made the following observations: A greater proportion of studies focused on prioritization rather than gap identification; there were increases in the involvement of stakeholders; and no studies evaluated the reproducibility of the methods or frameworks. Carey, Yon, et al., 2012, recommended that a literature scan be repeated in one to two years following

their review, given that the development of formal processes and methods to identify and prioritize research gaps appeared to be increasing and encompassed a variety of approaches, which are characteristic of a developing field (Carey, Yon, et al., 2012; Yoshida, 2016).

A recently published review of methods for gap identification and prioritization in health research, limited to the years 2007 to 2017, found that, of the 139 published documents identified, the majority focused on gap identification alone (65 percent), and the remaining ones focused either on prioritization alone (17 percent) or on both gap identification and prioritization (19 percent) (Nyanchoka et al., 2019). For gap identification, the most predominantly used method (69 percent) involved secondary research primarily consisting of knowledge synthesis (e.g., systematic review, scoping review, evidence mapping, literature review). A much smaller proportion (10 percent) relied on primary research methods (i.e., quantitative survey, academic sourcing, needs assessment). For research prioritization, a combination of both primary research (e.g., Delphi survey, quantitative survey) and secondary research (e.g., global evidence-mapping method) was the method most frequently used.

The Nyanchoka et al., 2019, review laid a valuable foundation for describing the types of methods used to identify research gaps and priorities; however, to facilitate more-standardized and -systematic processes, other important areas warrant further investigation. For both gap identification and prioritization, an updated review of the frameworks, tools, and concepts used, especially when systematic reviews are not involved, would assist in assessing whether more-consistent and -standardized processes are being used. Moreover, the prior reviews did not distinguish between research gaps versus research needs. Furthermore, Nyanchoka et al., 2019, noted variations in how *research gap* is defined and conceptualized and relied on author definitions to classify studies. In addition, given the rise in the use of stakeholders in both gap identification and prioritization, a greater understanding of the range of practices involving stakeholders is needed. This includes the roles and responsibilities of stakeholders (e.g., consultants versus final decisionmakers), the composition of stakeholders (e.g., nonresearch clinicians, patients, caregivers, policymakers), and the methods used to recruit stakeholders. Although there is a lack of consensus on what constitutes a stakeholder (O'Haire et al., 2011), Concannon et al., 2012, defined a *stakeholder* as an "individual or group who is responsible for or affected by health- and health care–related decision that can be informed by research evidence." Operational types of information (e.g., costs, timeline, challenges encountered) are also essential in providing guidance to organizations about the scope, required inputs, and feasibility of various methods. Furthermore, given the lack of consistent practices or consensus on best practices, it is important to learn whether criteria or evaluations were implemented to determine the impact of gap, need, and prioritization exercises, and if so, what the results were. Finally, although the documentation of methods used to identify research gaps and prioritization appears to be on the rise, the extent to which these exercises are implemented to guide actual funding decisions is unclear.

The U.S. Department of Defense (DoD) dedicates substantial resources toward psychological health research to improve the prevention, detection, and treatment of mental health conditions to support the well-being of its force (Institute of Medicine, 2014). Like other funders of research, DoD has a finite amount of resources to devote toward psychological health research. With the goal of ensuring that its research portfolios target areas with the greatest need and potential for impact, DoD's Psychological Health Center of Excellence (PHCoE) developed a new methodology for identifying and prioritizing research needs in the military health system (Kelber et al., 2019; Otto et al., 2018). Building on the predominant approaches to gap identification and prioritization—systematic reviews and stakeholder nomination processes—PHCoE's methodology also integrates new elements (e.g., consulting with stakeholders to identify high-priority topics areas, using reports from authoritative sources for gap identification, verifying gaps with recently published literature and in-progress research, and using subject-matter experts (SMEs) to prioritize identified gaps). In 2016, PHCoE piloted its newly developed methodology and plans to continually refine its process while generating an annual report on research recommendations for a selected topic area. This scoping review and case study review will provide a greater understanding of health research gap, needs, and prioritization practices that are used to determine funding decisions, which may offer guidance to organizations, such as DoD, that fund health research.

Objectives

To better inform such organizations as DoD that fund health research and conduct gap identification and prioritization exercises, this scoping review aims to describe and summarize the methods used to determine health research gaps, needs, and priorities. For approaches that were linked to potential or actual research funding decisionmaking, we also document impact evaluations of the exercise (if applicable), study replications, and challenges or limitations associated with conducting the exercises. Furthermore, we also explore current health research funding organizations' priority-setting practices, which may provide funders with valuable information for benchmarking or for informing existing practices.

The scoping review will address the following questions:

1. What are the characteristics of methods to identify research gaps, establish research needs, and determine research priorities?
2. To what extent have methods been used by research funding organizations and what was the impact?

2. Methods

Protocol and Registration

We conducted a scoping review to describe approaches used to identify health research gaps, establish research needs, and determine research priorities. Colquhoun et al., 2014, defined a scoping review as "a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge." Scoping reviews may also be executed to characterize the ways an area of research has been conducted (Peters et al., 2015). The broad nature of this work, with its focus on investigating methods for research gap, needs, and priority identification, lends itself to a scoping review (Munn et al., 2018; Colquhoun et al., 2014). The present scoping review included a search of published documents in research databases. We also reviewed procedures that top funding organizations of health research, both public and philanthropic and inside and outside North America, use. We used systematic and transparent methods and reporting methods that adhered to Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews guidelines (Tricco et al., 2018). The scoping review protocol is registered with the Open Science Framework, an international, free, open, registry for research studies (Wong et al., 2019).

Information Sources

To identify relevant documents for the scoping review, we searched the MEDLINE, PsycINFO, and the Web of Science databases. Our database search also included an update of the Nyanchoka et al., 2019, scoping review, given that the authors' database searches were conducted up until the year 2017. The database search and scoping review update were completed in August and September 2019, respectively. See Appendix B for more details.

In addition, we used a prior study (Viergever and Hendriks, 2016) to select top health research funding organizations inside and outside North America. Viergever and Hendriks reviewed members of three collaborative groups of funders of health research (Heads of International Research Organizations, African Network for Drugs and Diagnostics Innovation, and Enhancing Support for Strengthening the Effectiveness of National Capacity Efforts). The authors identified national funders of health research across 27 countries by reviewing policy reports, gray literature, and publications for G20 countries; the 20 countries with the highest overall spending on health research; and the 20 countries with the highest public spending on health research. Furthermore, Viergever and Hendriks reviewed openly available lists of public funders that included annual spending on health research for each funder. They identified major

philanthropic funders by reviewing the members of three collaborative groups of funders and publicly available lists of philanthropic funders that included annual spending on health research. We selected the top three public and top two philanthropic funding organizations both inside and outside North America, including a total of ten funding organizations in the study (see Table 1.1).

Table 1.1. List of Selected Health Research Funding Organizations

Country	Health Research Funding Organizations	Type	Total Health Research Expenditures[a]
Inside North America			
United States	National Institutes of Health (NIH)	Public	26,081.3[b]
United States	DoD largest subprogram: Congressionally Directed Medical Research Program (CDMRP)	Public	409.0[b]
Canada	Canadian Institutes of Health Research (CIHR)	Public	883.6[b]
United States	Howard Hughes Medical Institute (HHMI)	Philanthropic	752.0[b]
United States	Bill and Melinda Gates Foundation (BMGF)	Philanthropic	462.6[b]
Outside North America			
European Union	European Commission (EC)	Public	1,181.7[c]
United Kingdom (UK)	UK Medical Research Council (MRC)	Public	3,717.7[b]
Australia	Australian National Health and Medical Research Council (NHMRC)	Public	777.6[b]
United Kingdom	Wellcome Trust	Philanthropic	909.1[b]
France	Institut Pasteur	Philanthropic	220.9[b]

[a] Amounts in millions of 2013 U.S. dollars.
[b] Actual expenditure, only health; excludes operational.
[c] Commitments, only health; excludes operational. Based on Viergever and Hendriks, 2016.

We searched the organizational websites for information on the approaches of the selected organizations. In addition, we conducted a targeted MEDLINE search for articles published on these organizations, as well as Google and Google Scholar searches. See Appendix B for more details.

Search

The searches were developed, executed, and documented by an evidence-based practice center (EPC) librarian. Literature searches were informed by existing reviews on similar topics (e.g., Pollitt et al., 2016; Robinson, Saldanha, and Mckoy, 2011b) and was further informed by content experts. The search strategy included multiple terms related to research gaps, needs, and priorities. Appendix B describes the specific search terms and filters for each database.

Selection of Sources of Evidence

Two independent reviewers screened the titles and abstracts of retrieved citations and full-text publications. Citations that one or both reviewers considered potentially eligible were retrieved for full-text publications. Full-text publications were screened against detailed inclusion and exclusion criteria. The study team then discussed and resolved disagreements, with the topic lead making the final decision. Reasons for exclusion were recorded in a database.

For the scoping review, we included documents that report on approaches for health research gaps, needs, and prioritization. The eligibility criteria for participants, interventions, outcomes, timing, setting, and study design were as follows:

- **Participants:** Studies describing participants involved in identifying research gaps, establishing research needs, and/or determining research priorities were eligible for inclusion. Studies involving animals or living organisms at the molecular level were excluded.
- **Interventions:** Approaches to identifying research gaps, establishing research needs, or determining research priorities with the aim of guiding funding decisions for future research were eligible for inclusion. Research areas were prevention interventions promoting health, health diagnostics, treatments for health conditions, and organizational quality improvement interventions in health care delivery settings. We excluded studies focusing on basic science questions, health care service delivery decisions, or resource allocation. Publications reporting results (e.g., results of the gap analysis), absent the information on the process of how they were derived, were excluded. We excluded publications involving literature reviews that did not have an explicit purpose or method of research gap, needs, or priority identification. We also excluded literature reviews that were solely descriptive and that did not use an explicit method to identify research gaps, needs, or priorities.
- **Outcomes:** Studies describing the methods and results of approaches to identifying gaps, needs, or priorities in health research were eligible.
- **Setting:** Settings included national and international settings. Organizations conducting or funding the gap, needs, or priorities identification included nonprofit and for-profit organizations and government agencies. Only studies published in English were eligible; non-English studies were excluded.
- **Study Design:** Eligible studies described empirical work to document and/or evaluate an approach to identify gaps, establish needs, or determine priorities in health research. We retained relevant systematic reviews and key background articles for reference mining.

Data-Charting Process

We used a two-tiered data extraction protocol. First, for studies in which a clear connection to actual or potential funding decisionmaking could not be established, we extracted text descriptions of the methods used to address health research gaps, needs, and priorities. We categorized studies by methods related to the identification of research gaps, needs, and priorities to the extent possible, given that research gaps and needs have been conceptualized as distinct

from another (Robinson, Saldanha, and Mckoy, 2011a; Saldanha et al., 2013). Second, for the studies in which the gap, needs, or prioritization exercises were linked to actual or potential funding decisionmaking, we implemented full data extraction, categorizing aspects of the exercise in detail. For these studies, we documented the methods and procedures used and the results of the exercise (if applicable). Studies were considered to be linked to actual or potential funding decisionmaking if there was explicit mention of the exercise being used for funding decisions or if the exercise was funded by a research funding organization.

The project team created a data extraction form, which included detailed instructions and decision rules for reviewers to maintain a standardized data-collection process. To ensure consistency of interpretation of all fields on the form, reviewers pilot-tested the form on a few studies for which results have been clearly reported. Data was extracted by one reviewer and checked by a second reviewer. We resolved any discrepancies through discussion. Comprehensive screening forms were developed for managing and recording information for each stage of screening and data extraction using software designed for literature reviews.

Data Items

For each published document, we extracted details about the study; the aim of the exercise(s) conducted; and, for each exercise conducted, details about the methods used.

Study Details

- **Health condition:** physical health (specify), psychological health (specify)
- **Topic/focus area:** prevention, treatment, symptom management (i.e., palliative care), diagnosis/assessments, service delivery/models of care, etiology/risk factors, basic science (e.g., mechanism of action)
- **Timeline:** length of time to complete exercise (i.e., less than 6 months, 6–12 months, more than 12 months to 18 months, 18 months or more)
- **Setting:** country/continent where exercise was conducted
- **Funding organization:** Organization that funded the gap, need, or priority exercise including multiple funders; professional association; health care delivery organization; government; research institute; consumer organization, industry, not funded
- **Cost:** total costs to conduct exercises.

Aim(s) of the Exercise(s)

- **Aim of the exercise(s):** We focused on gaps, needs, and priorities (Robinson, Saldanha, and Mckoy, 2011a; Saldanha et al., 2013):
  - *research gaps*—areas or topics in which the ability to draw a conclusion for a given question is prohibited by insufficient evidence
  - *research needs*—research gaps that significantly inhibit the decisionmaking ability of key stakeholders, who are end users of research, such as patients, clinicians, and policymakers

– *research priorities*—research gaps or needs that are prioritized by selected criteria (e.g., potential value, importance to stakeholders).

Given that research needs are defined as research gaps that are important to address from the vantage point of end users, we categorized studies that involved nonresearchers in the identification of research gaps as aims related to establishing research needs. Correspondingly, studies that included researchers only in the identification of research gaps were categorized as aims related to identifying research gaps.[4]

• **Types of aims:** Some studies conducted a single exercise, while others conducted multiple exercises. We used the following categories to depict the types of study aims:

– gaps only
– needs only
– priorities only
– gaps and needs
– gaps and priorities
– needs and priorities
– gaps, needs, and priorities.

Note that research priority exercises can be preceded by exercises to identify research gaps, research needs, or both, which then feed into the research priority exercise. In such cases, the aim of the study was categorized as a combination of the exercises conducted (e.g., gaps and priorities). However, stand-alone priority exercises can also be conducted (e.g., participants are asked to prioritize an initial list of emerging diseases) which would be coded as priority-only exercises.

Method Details

For each type of exercise conducted, we recorded detailed information on the methods used. We based an initial list of methods on previous reviews (e.g., Carey, Yon, et al., 2012; Tomlinson, Chopra, et al., 2011; Viergever, Olifson, et al., 2010). During the data abstraction process, if study authors referred to methods not included on the initial list of methods, these were subsequently added. If more than one exercise was reported within an article (e.g., both research gap identification and prioritization were conducted), the information listed in this subsection was extracted for each exercise described. For example, information regarding the methods, involvement of stakeholders, consensus methods, prioritization criteria, and required technology/inputs was recorded separately for gap identification and for prioritization. The CHNRI (Rudan, Gibson, Ameratunga, et al., 2008), ENHR, and JLA Research Priority Setting Partnership (PSP) (JLA, 2020; JLA, 2021) methods are systematic, multiphase, approaches to research priority setting. Although described in the literature as research priority–setting methods (Tong, Synnot, et al., 2019), these methods can include gap and need identification as one of the

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[4] In the case of studies involving the identification of research gaps, researchers are considered stakeholders, although there is a lack of consensus on whether researchers should be regarded as stakeholders (O'Haire et al., 2011).

preceding steps that feed into prioritization exercises. See Appendix A for a more detailed description of these methods. We extracted the following information:

- **Method**
  - framework tool (e.g., application of a framework to characterize gaps, needs, or priorities, such as population, intervention, comparison, outcomes, timeframe, setting [PICOTS])
  - systematic review
  - scoping review
  - literature review
  - umbrella review
  - evidence mapping
  - qualitative methods (e.g., interviews; listing gaps, needs, or priorities)
  - quantitative methods (e.g., rankings, Likert scale)
  - consensus methods (e.g., Delphi, nominal group technique, generic reference to the use of consensus)
  - workshop, meeting, or conference (including web meeting, teleconference)[5]
  - consultation with stakeholders (other than just researchers)
  - review or assessment of surveillance data
  - review of in-progress research (e.g., in-progress studies on U.S. National Library of Medicine (NLM), undated, clinical trial registries, and funding organizations research portfolios, such as NIH)
  - review of source materials (e.g., clinical guidelines, research reports, prior systematic reviews)[6]
  - CHNRI
  - ENHR
  - JLA PSP
  - other description (specify).

- **Criteria for identifying gaps, needs, or priorities:** costs, burden of disease, importance to stakeholders, patient centeredness, alignment with organization mission, potential value (i.e., significant health or economic impact), potential risk from inaction (i.e., potential harm incurred from inaction), addresses inequities (i.e., vulnerable populations), feasibility.

- **Methods for final determination for gaps, needs, or priorities:** What method was used to determine the final set of research gaps, needs, and prioritization process?

  - vote, rank, or ranking
  - open-ended listing
  - consensus

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[5] Studies that described the use of specific methods (e.g., expert or stakeholder consensus) within workshops, conferences, or meetings were coded as used both the specific method and workshops, conferences, or meetings.

[6] This refers to reviewing already published systematic reviews to identify research gaps or priorities, which is distinct from conducting a systematic review.

- – expert determination
- – other
- – not reported
- – not applicable
- – unclear

- • **Stakeholders/participants:**

  - – involvement of stakeholders other than the researchers
  - – composition of stakeholders (Concannon et al., 2012):
    - ▪ patients and the public (e.g., consumers, caregivers, families, patient and consumer advocacy organizations)
    - ▪ clinicians (e.g., individual providers, provider organizations)
    - ▪ purchasers (e.g., employers, the self-insured, government and other entities responsible for underwriting the costs of health care)
    - ▪ payers (e.g., insurers, state insurance exchanges)
    - ▪ policymakers (e.g., professional associations, Department of Health and Human Services)
    - ▪ product makers (e.g., drug and device manufacturers)
    - ▪ principal investigators (e.g., other researchers and their funders, SMEs)
  - – **Method for identifying stakeholders**
    - ▪ snowball (e.g., participants assist with identifying other participants)
    - ▪ convenience (e.g., drawing from accessible pool of people)
    - ▪ stakeholder organizations
    - ▪ purposive (e.g., selecting participants to represent certain segments of the population, such as certain stakeholder types, geographic regions, demographic groups)
  - – **Stakeholder engagement intensity** (Concannon, 2019)
    - ▪ communication (e.g., informal conversations, discussions)
    - ▪ consultation (e.g., input during exercise)
    - ▪ collaboration (e.g., part of final decisionmaking on identification of gap, needs, priorities)
    - ▪ coproduction (e.g., authors on documentation, involvement in funding)

- • What are the technologies used for **research gaps/needs/prioritization process?** (e.g., online survey)
- • **What are the other required inputs used?** (e.g., workshop, forming standing committee)
- • **Impact:** evaluations on impact of exercise, criteria used, and results
- • **Replication:** whether method has been replicated
- • **Challenges/limitations:** e.g., recruiting stakeholders, costs, duration.

Synthesis of Results

In keeping with our two-tiered extraction protocol, we extracted only brief text descriptions of the methods used to address health research gaps, needs, and priorities for studies in which a

connection to actual or potential funding decisionmaking was unclear. We conducted a detailed data abstraction and descriptive synthesis to describe the characteristics of the subset of studies that used methods that were supported or conducted by research funding organizations (i.e., health condition, area of focus, timeline, type of funding organization, setting, and cost of exercise). We summarized approaches to identifying research gaps, establishing research needs, and determining research priorities in a narrative synthesis. The synthesis addressed the methods used, stakeholder processes, and the criteria applied to make final determinations. We also summarized evaluations and replication of methods to identify health research gaps, needs, and priorities and identified challenges and limitations associated with methods in a narrative.
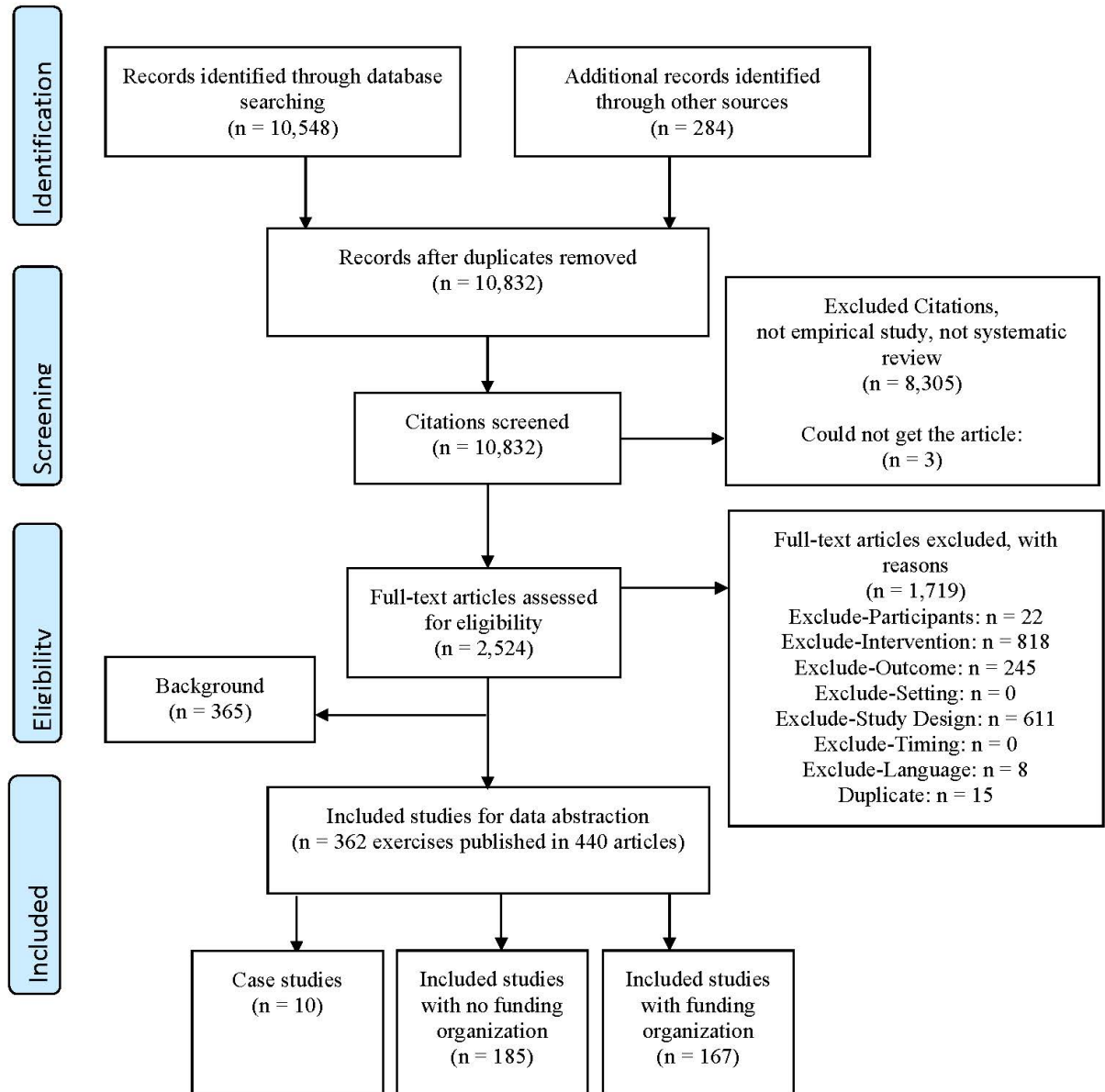
3. Results

Selection of Sources of Evidence

The database search yielded a total of 10,548 titles. Searching the reference lists of full text-publications yielded another 284 titles. We screened a total of 10,832 titles and abstracts and excluded 8,308 titles. Using the eligibility criteria described in Chapter 2, we conducted full-text screening for 2,524 publications, which resulted in 1,719 exclusions (see Figure 3.1 for the reasons for exclusions) and the designation of 365 studies as background articles. A total of 362 studies conducted exercises related to the identification of health research gap, needs, or priorities that were described across 440 publications. We identified 167 of the 362 full-text publications that were designated as the main publication of the exercise as being associated with actual or potential funding decisionmaking and subjected them to full data abstraction.

In addition, we screened all included studies in three systematic reviews (Rylance et al., 2010; Tong, Chando, et al., 2015; Tong, Sautenet, et al., 2017) and one scoping review (Bourne et al., 2018) that had met eligibility criteria. Moreover, a total of 99 publications designated as relevant background articles were also reference mined to screen for eligible studies.

The gray literature search elicited source materials that included reports, information posted on funding organizations websites, and research publications.

Figure 3.1. Literature Flow


```
[Identification]

Records identified through database          Additional records identified
searching                                     through other sources
(n = 10,548)                                  (n = 284)
                    |                                    |
                    +----------------+-------------------+
                                     |
                                     v
[Screening]
                    Records after duplicates removed
                    (n = 10,832)
                                     |
                                     v
                    Citations screened  ----------->  Excluded Citations,
                    (n = 10,832)                       not empirical study, not systematic
                                                       review
                                                       (n = 8,305)

                                                       Could not get the article:
                                                       (n = 3)
                                     |
                                     v
[Eligibility]
                    Full-text articles assessed  -->  Full-text articles excluded, with
                    for eligibility                   reasons
                    (n = 2,524)                       (n = 1,719)
                                                      Exclude-Participants: n = 22
    Background  <----------------------------        Exclude-Intervention: n = 818
    (n = 365)                                        Exclude-Outcome: n = 245
                                                      Exclude-Setting: n = 0
                                                      Exclude-Study Design: n = 611
                                                      Exclude-Timing: n = 0
                                                      Exclude-Language: n = 8
                                                      Duplicate: n = 15
                                     |
                                     v
[Included]
                    Included studies for data abstraction
                    (n = 362 exercises published in 440 articles)
                    |               |                 |
                    v               v                 v
              Case studies    Included studies    Included studies
              (n = 10)        with no funding     with funding
                              organization        organization
                              (n = 185)           (n = 167)
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13

Characteristics of Sources of Evidence

For all the publications that met inclusion criteria, we describe the aim(s) of the exercise(s) conducted across studies (e.g., identification of research gaps only, combination of research needs and priorities) in this section. Following our two-tiered data abstraction process as described in Chapter 2, we describe the aims of the exercises first for studies without a clear link to actual or potential funding decisionmaking and then for studies in which there was evidence of such a connection. For the latter set of studies, we also present additional study characteristics that were extracted as part of the full data abstraction process.

Aims of Exercises Not Linked to Funding Decisionmaking

Of the 362 publications that met inclusion criteria, 185 were not explicitly linked to actual or potential funding decisionmaking. One-half of these publications focused either on research prioritization alone (28 percent; $N = 51$) or a combination of research needs and priorities (22 percent; $N = 40$). Another 17 percent ($N = 32$) focused on a combination of research gaps and priorities, 14 percent ($N = 25$) on research gaps only, and 12 percent ($N = 23$) on research needs only. A small proportion of publications focused on a combination of research gaps, needs, and priorities (4 percent; $N = 8$) and a combination of research gaps and needs (3 percent; $N = 6$). The evidence table in Appendix C provides descriptions of the approaches that these empirical studies used to identify research gaps, establish research needs, and/or determine research priorities. The results presented in the rest of this chapter pertain to the 167 studies that were linked to actual or potential research funding decisionmaking (i.e., approaches supported or used by funding organizations).

Aims of Exercises Supported or Used by Funding Organizations

Among the 167 publications that were associated with actual or potential research funding decisionmaking, more than one-half centered on the identification of research needs and priorities (53 percent; $N = 88$). Nearly one-third were evenly split between studies that focused on priorities only (14 percent; $N = 23$) and those involving the identification of both gaps and priorities (14 percent; $N = 24$). For the remaining studies, 7 percent ($N = 12$) focused on the identification of research gaps only; 6 percent ($N = 10$) on research needs only; 3 percent ($N = 5$) on research gaps and needs; and 3 percent ($N = 5$) on research gaps, needs, and priorities. See Appendix C.

The following subsections provide additional information related to the characteristics of this subset of studies that were connected to funding decisionmaking.

Health Condition and Area of Focus

Of the 167 studies that were tied to funding decisionmaking, the vast majority conducted research gap, need, or prioritization exercises related to physical health conditions (91 percent;

$N = 152$). In contrast, only 7 percent ($N = 12$) of the studies centered on psychological health conditions (Carey et al., 2010; Carey et al., 2013; Claassen et al., 2014; Gaynes et al., 2012; Gregório et al., 2012; Hollis et al., 2018; Kelber et al., 2019; Kelly et al., 2015; Kolanowski et al., 2018; Lloyd and White, 2011; Otto et al., 2018; Tomlinson, Yasamy, et al., 2014). Two studies spanned both physical and psychological health conditions (Doolan-Noble et al., 2019; Gordon et al., 2017), and one study was not directly related to a health condition but rather involved identifying research needs and priorities related to unanswered questions about how to effectively recruit people to take part in randomized trials (Healy et al., 2018).

With respect to areas of focus, a little more than two in three involved the identification of health research gaps, needs, and/or priorities related to treatment (69 percent; $N = 115$). Eighteen percent ($N = 30$) of studies had a focus on prevention, 13 percent ($N = 22$) on diagnostics or assessments, 10 percent ($N = 16$) on basic science, 10 percent ($N = 16$) on symptom management, 7 percent ($N = 12$) on service delivery or models of care, and 6 percent ($N = 10$) on etiology or risk factors. Another 6 percent ($N = 10$) of studies covered other areas, ones that did not fall within the predefined categories (e.g., national health research priorities). The areas of focus total more than 100 percent given that some studies covered multiple areas of focus.

Timeline

Nearly one-third of studies (29 percent; $N = 48$) completed the health research gap, need, and/or priority exercise in less than six months. Another 13 percent of studies ($N = 22$) took six to 12 months to conduct the exercise, and 7 percent ($N = 12$) of studies required more than 12 months and up to 18 months to execute the exercises. For 10 percent of studies ($N = 16$), the exercises necessitated greater than 18 months for completion. A substantial proportion of studies did not report the length of time required to complete the exercises (41 percent; $N = 68$).

Type of Funding Organization, Setting, and Cost

The most studies were conducted within the United States (38 percent; $N = 63$), followed by the United Kingdom (26 percent; $N = 44$), and then Canada (11 percent; $N = 19$). Government funding institutes were the type of organization that was most likely to have funded the exercises or to have used the exercises for funding decisions (60 percent; $N = 100$). The next most common types of organization that had supported or used the exercises for funding decisions were foundations or charitable organizations (16 percent; $N = 27$) and professional associations (14 percent; $N = 24$). Consumer organizations (2 percent; $N = 4$), industry (1 percent; $N = 2$) and health care delivery organizations (1 percent; $N = 2$) were less frequently involved in research gap, needs, and priority identification exercises used for funding decisionmaking. Twenty percent of studies ($N = 34$) reported that some other type of organization (e.g., academic institution, World Health Organization [WHO]) had supported or used the exercise for funding decisions. Eight studies (5 percent) did not explicitly report the involvement of any type of

funding organization. Only four studies (2 percent) provided information related to the costs of conducting the gap, need, or priority-setting exercise (Otto et al., 2018; Rangan et al., 2016; Tong, Sainsbury, et al., 2008; Tong, Crowe, et al., 2015).

Results of Individual Sources of Evidence

In this section, we present the relevant data for the studies linked to actual or potential funding decisions, organized by our review questions. Accordingly, the results here are for exercises related to identifying research gaps, establishing research needs, and determining research priorities in health research.[7] As described earlier, a number of studies adopted approaches that covered more than one exercise (i.e., gaps and needs; gaps and priorities; needs and priorities; gaps, needs, and priorities).

For each type of approach, we describe findings related to the methods used; the criteria applied to determine research gaps, needs, and priorities; and the method used to determine the final set of research gaps, needs, and priorities. We also present findings regarding stakeholder involvement (i.e., whether stakeholders included individuals other than researchers, the composition of stakeholders, methods for identifying stakeholders, and stakeholder engagement intensity).

The last section of this chapter synthesizes the approaches and methods that funding organizations used and describes the extent to which the effects of these methods have been replicated and evaluated. A narrative review of the challenges and limitations documented across the studies is also provided. The detailed results of the full data abstraction are presented in an evidence table in Appendix C.

What Are the Characteristics of Methods Used to Identify Research Gaps, Establish Research Needs, and Determine Research Priorities?

Before presenting the methods each type of approach used, we first break down methods used by each type of exercise across all studies. As Table 3.1 shows, a total of 46 studies across gaps only; gaps and needs; gaps and priorities; and gaps, needs, and priorities approaches conducted gap identification exercises. The method most frequently used for identifying research gaps was conducting literature reviews (35 percent), followed by workshops, conferences, and meetings (33 percent). Among the 107 studies that conducted exercises related to identifying research needs, a substantial proportion used the JLA PSP method (43 percent). Of the 140 studies that conducted prioritization exercises, 25 percent had applied the JLA PSP method, and 25 percent had used quantitative methods.

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[7] By definition, *research needs* are research gaps that end users of research view as important to address for decisionmaking. Thus, we categorized studies as establishing *research needs* if the identification of research gaps involved nonresearchers. Correspondingly, we categorized studies as identifying *research gaps* if only researchers were involved.

Table 3.1. Methods for Identifying Research Gaps,
Needs, and Priorities Across Studies

Method	Gaps (N = 46)		Needs (N = 107)		Priorities (N = 140)	
	n	**%**	**n**	**%**	**n**	**%**
Framework tool	0	0	1	1	2	1
JLA PSP	0	0	46	43	45	25
ENHR	0	0	2	2	2	1
CHNRI	5	11	4	4	11	6
Systematic review	0	0	1	1	1	1
Literature review	16	35	7	6	9	5
Evidence mapping	0	0	0	0	1	1
Qualitative methods	5	11	16	15	11	6
Quantitative methods	4	9	13	12	45	25
Consensus methods	2	4	9	8	16	9
Workshop or conference	15	33	15	14	33	18
Stakeholder consultation	1	2	6	6	1	1
Review in-progress data	7	15	6	6	0	0
Review source materials	20	43	4	4	2	1

Most of the approaches consisted of a combination of exercises. However, we identified a few studies that exclusively addressed research gaps only, research needs only, or research priorities only.

Research Gaps Only

For studies that involved the identification of research gaps only, all convened some type of workshop or conference in which expert presentations and discussions were held to identify research gaps ($N = 12$; 100 percent) (see Table 3.2). Three studies mentioned that the workshops or conferences involved experts conducting a review of literature (Kolanowski et al., 2018; Repacholi and Greenebaum, 1999; Stout et al., 2016). One study conducted a survey to solicit input from experts prior to the workshop (Repacholi and Greenebaum, 1999). Literature reviews ($N = 3$) and qualitative methods ($N = 1$) were also used to identify research gaps.

As Table 3.3 shows, the most commonly reported criterion used to identify research gaps was the potential value associated with addressing the research gap (Marrazzo et al., 2010; Repacholi and Greenebaum, 1999; Reid et al., 2011). Other criteria reported by studies included the importance to stakeholders ($N = 2$), burden of the disease ($N = 1$), and alignment with organization's mission ($N = 1$). Six studies did not report the application of any kind of specific criteria.

Table 3.2. Methods for Identifying Research Gaps, Needs, and Priorities by Study Approach

Method	All (N = 167)		Gaps Only (N = 12)		Needs Only (N = 10)		Priorities Only (N = 23)		Gaps and Needs (N = 5)		Gaps and Priorities (N = 24)		Needs and Priorities (N = 88)		Gaps, Needs, and Priorities (N = 5)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Framework tool	6	4	0	0	0	0	1	4	1	20	3	13	0	0	1	20
JLA PSP	46	28	0	0	0	0	0	0	0	0	0	0	46	53	0	0
ENHR	2	1	0	0	0	0	0	0	0	0	0	0	2	2	0	0
CHNRI	11	7	0	0	0	0	1	4	0	0	6	25	4	5	0	0
Systematic review	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Literature Review	29	17	3	25	2	0	5	22	2	40	7	29	7	8	3	60
Evidence mapping	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Qualitative methods	28	17	1	8	2	20	2	9	1	20	4	17	14	16	4	80
Quantitative methods	54	32	1	8	2	20	11	48	2	40	11	46	22	25	5	100
Consensus methods	22	13	0	0	0	0	3	13	1	20	4	17	11	13	3	60
Workshop or conference	61	37	12	100	7	70	13	57	5	100	5	21	15	17	4	80
Stakeholder consultation	7	4	0	0	0	0	0	0	1	20	1	4	3	3	2	40
Review in-progress data	12	7	0	0	1	10	0	0	1	20	3	13	6	7	1	20
Review source materials	25	16	0	0	0	0	3	13	2	40	11	46	5	6	5	100
Other	28	17	0	0	2	20	6	26	0	0	4	17	14	16	2	40
Unclear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Because some studies used more than one method, numbers in columns may add up to more than the total *N* or 100 percent.

Table 3.3. Criteria for Identifying Research Gaps, Needs, and Priorities

Criteria	All (N = 167)		Gaps Only (N = 12)		Needs Only (N = 10)		Priorities Only (N = 23)		Gaps and Needs (N = 5)		Gaps and Priorities (N = 24)		Needs and Priorities (N = 88)		Gaps, Needs, and Priorities (N = 5)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Costs	10	6	0	0	0	0	4	17	2	40	4	17	0	0	0	0
Burden of disease	15	9	0	0	1	10	3	13	1	20	6	25	4	5	0	0
Importance to stakeholders	120	72	2	17	5	50	6	26	5	100	15	63	83	94	4	80
Patient centeredness	4	2	0	0	0	0	0	0	0	0	1	4	3	3	0	0
Aligned with organization mission	5	3	1	8	0	0	2	9	0	0	1	4	1	1	0	0
Potential value	49	29	3	25	2	20	11	48	1	20	12	50	16	18	4	80
Potential risk from inaction	5	3	0	0	0	0	3	13	0	0	1	4	1	1	0	0
Addresses inequities	13	8	0	0	0	0	2	9	0	0	7	29	4	5	0	0
Feasibility	30	18	0	0	0	0	4	17	2	40	9	38	11	13	4	80
Other	37	22	0	0	0	0	9	39	4	80	9	38	12	14	3	60
Not reported	14	8	5	42	2	20	3	13	0	0	2	8	1	1	1	20
Not applicable	13	8	0	0	1	10	0	0	0	0	5	21	5	6	2	40
Unclear	12	7	1	8	0	0	2	9	3	60	3	13	2	2	1	20

NOTE: Because some studies used more than one criterion, numbers in columns may add up to more than the total *N* or 100 percent.

In making the final determination of research gaps, three studies made generic references to consensus being achieved but no specific consensus methods were described (Lahm et al., 2018; Repacholi and Greenebaum, 1999; Stout et al., 2016) (see Table 3.4). Two studies relied on expert consultation to determine the final set of research gaps (Duintjer Tebbens et al., 2013; Marrazzo et al., 2010).

Of the remaining studies, six described generic processes (e.g., participant discussion at workshop) which were coded as "other," and one study did not report any details on the methods used.

By definition, the studies that focused on research gap identification alone primarily involved researchers as stakeholders. As Table 3.5 shows, nine studies described the involvement of researchers, one study referred to the involvement of representatives from a government funding agency, and three cited the involvement of experts (Duintjer Tebbens et al., 2013; Lahm et al., 2018; Shapira, Lloyd-Puryear, and Boyle, 2010). Clinicians were involved in the largest proportion of all the studies (69 percent), followed by researchers (66 percent) and patients (59 percent). A smaller proportion of studies included policymakers (20 percent), funders (14 percent), product makers (8 percent), payers (5 percent), and purchasers (2 percent) as stakeholders. Most studies included nonresearchers as stakeholders (84 percent).

Table 3.6 breaks down the involvement of each stakeholder type across each type of exercise. For studies with multiple exercises (e.g., needs and priorities), it is possible that certain stakeholders (e.g., patients) participated in only a subset of the exercises (e.g., needs but not priorities). Among the 46 studies that conducted gap identification exercises (i.e., gaps only; gaps and needs; gaps and priorities; and gaps, needs, and priorities), a large majority (85 percent) involved researchers in the gap identification process. Funders were a small proportion of stakeholders involved in gap identification exercises (2 percent). Among the 109 studies that conducted need identification exercises, a substantial proportion included clinicians (84 percent) and patients (76 percent). Researchers were included as stakeholders in more than one-half of the need identification exercises, whereas policymakers participated in one-fifth of the need identification exercises. A similar pattern of stakeholder involvement was observed among the 140 studies that conducted prioritization exercises. A majority of the prioritization exercises included clinicians (72 percent) and patients (61 percent), followed by researchers (50 percent) and policymakers (20 percent). With respect to the involvement of nonresearcher stakeholders, only 20 percent of gap identification exercises included stakeholder types other than researchers. In contrast, nearly all the need identification exercises (99 percent) and prioritization exercises (91 percent) included nonresearcher stakeholders

Table 3.4. Methods for the Final Determination of Research Gaps, Needs, and Priorities

Methods	All (N = 167)		Gaps Only (N = 12)		Needs Only (N = 10)		Priorities Only (N = 23)		Gaps and Needs[a] (N = 5)		Gaps and Priorities[a] (N = 24)		Needs and Priorities[a] (N = 88)		Gaps, Needs, and Priorities[a] (N = 5)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Vote, rank, or rating	84	51	0	0	1	10	11	48	3	60	19	79	48	55	3	60
Consensus	53	32	3	25	1	10	5	22	0	0	3	13	38	43	3	60
Open-ended listing	52	31	0	0	1	10	0	0	0	0	3	13	48	55	0	0
Expert determination	12	7	2	17	0	0	1	4	1	20	7	29	0	0	0	0
Other	47	28	6	50	2	20	3	13	2	40	11	46	0	0	4	80
Not reported	8	5	1	8	2	20	2	9	0	0	1	4	1	1	1	20
Not applicable	4	2	0	0	0	0	0	0	0	0	2	8	2	2	0	0
Unclear	13	8	0	0	3	30	2	9	2	40	1	4	4	5	1	20

[a] Because the method for each exercise was coded if the method differed across exercises, the numbers in columns may add up to more than the total N or 100 percent for studies involving more than one exercise. For instance, in a study of gaps and priorities, expert determination may have been used to identify gaps and voting for identifying priorities, which would result in multiple methods being recorded for a single study.

Table 3.5. Stakeholder Composition

	All (N = 167)		Gaps Only (N = 12)		Needs Only (N = 10)		Priorities Only (N = 23)		Gaps and Needs (N = 5)		Gaps and Priorities (N = 24)		Needs and Priorities (N = 88)		Gaps, Needs, and Priorities (N = 5)	
	n	%	*n*	%	*n*	%	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Nonresearcher stakeholders	141	84	4	33	10	100	13	56	5	100	18	75	86	98	5	100
Patients	98	59	0	0	6	60	4	17	2	40	10	42	71	81	4	80
Clinicians	116	69	0	0	5	50	7	30	4	80	17	71	78	89	5	100
Purchasers	4	2	0	0	0	0	1	4	0	0	0	0	3	3	0	0
Payers	9	5	0	0	0	0	0	0	2	40	6	25	1	1	0	0
Policymakers	33	20	0	0	3	30	5	22	0	0	6	25	18	20	1	20
Product makers	13	8	0	0	0	0	2	9	1	20	3	13	7	8	0	0
Researchers	110	66	9	75	8	80	18	78	4	80	20	83	46	52	5	100
Funders	24	14	1	8	0	0	1	4	4	80	7	29	11	13	0	0
Other	35	21	3	25	1	10	4	17	0	0	7	29	18	20	2	4
Not applicable	1	1	0	0	0	0	0	0	0	0	1	4	0	0	0	0
Not reported	1	1	0	0	0	0	0	0	0	0	1	4	0	0	0	0
Unclear	5	3	0	0	0	0	2	9	1	20	1	4	0	0	1	20

NOTE: Because some studies used more than one stakeholder type, numbers in columns may add up to more than the total *N* or 100 percent.

Table 3.6. Stakeholder Involvement in Gap, Needs, and Priority Identification Exercises

	Gap (*N* = 46)		Needs (*N* = 108)		Priorities (*N* = 140)	
	n	%	*n*	%	*n*	%
Nonresearcher stakeholders	9	20	108	100	127	91
Patients	0	0	82	76	86	61
Clinicians	0	0	91	84	101	72
Purchasers	0	0	1	1	4	3
Payers	0	0	3	3	7	5
Policymakers	0	0	22	20	28	20
Product makers	0	0	5	5	11	8
Researchers	39	85	58	54	70	50
Funders	1	2	13	12	11	0
Other	6	13	14	13	27	19
Not reported	1	2	0	0	0	0
Not applicable	0	0	1	1	0	0
Unclear	2	4	1	1	2	1

NOTE: Because some studies used more than one stakeholder type, numbers in columns may add up to more than the total *N* or 100 percent.

Stakeholders were identified through purposive sampling for one-half the studies (Duintjer Tebbens et al., 2013; Han et al., 2018; Kutlesic et al., 2017; Larsson et al., 2018; Matthews et al., 2018; Reid et al., 2011); the remaining studies did not specify how stakeholders were identified (see Table 3.7).

With respect to stakeholder engagement levels (see Table 3.8), nine studies characterized stakeholder involvement indicative of collaboration, and three studies were indicative coproduction (Kutlesic et al., 2017; Marrazzo et al., 2010; Matthews et al., 2018). Chapter two describes stakeholder engagement levels.

Research Needs Only

Of the ten studies that centered on the establishment of research needs only, 70 percent (*N* = 7) used methods involving workshops, meetings, or conferences, 20 percent used qualitative methods (*N* = 2), 20 percent quantitative methods (*N* = 2), 20 percent literature reviews (*N* = 2), and 10 percent review of in-progress data (*N* = 1). Two studies also used other types of methods, such as convening an expert panel (Rabinovich et al., 2017) or a committee (Pusateri et al., 2013) to synthesize the results of the exercise and contribute to the determination of research needs.

Table 3.7. Stakeholder Identification Methods

	All (N = 167)		Gaps Only (N = 12)		Needs Only (N = 10)		Priorities Only (N = 23)		Gaps and Needs (N = 5)		Gaps and Priorities (N = 24)		Needs and Priorities (N = 88)		Gaps, Needs, and Priorities (N = 5)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Snowball	15	9	0	0	0	0	2	9	0	0	3	13	10	11	0	0
Convenience	19	11	0	0	0	0	1	4	1	20	8	33	6	7	3	60
Stakeholder organizations	86	51	0	0	4	40	7	30	2	40	8	33	63	72	2	40
Purposive	43	26	6	50	3	30	5	22	0	0	10	42	21	24	3	60
Other	8	5	1	8	0	0	0	0	0	0	2	8	5	6	0	0
Not reported	17	10	5	42	0	0	4	17	0	0	4	17	3	3	1	20
Not applicable	5	3	0	0	0	0	0	0	2	40	1	4	1	1	1	20
Unclear	23	14	1	8	3	30	7	29	4	80	3	13	4	5	1	20

NOTE: Because some studies used more than one stakeholder identification method, numbers in columns may add up to more than the total *N* or 100 percent.

Table 3.8. Stakeholder Engagement Levels

Engagement Levels	All (N = 167)		Gaps Only (N = 12)		Needs Only (N = 10)		Priorities Only (N = 23)		Gaps and Needs[a] (N = 5)		Gaps and Priorities[a] (N = 24)		Needs and Priorities[a] (N = 88)		Gaps, Needs, and Priorities[a] (N = 5)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Communication	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Consultation	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	20
Collaboration	153	92	9	75	10	100	23	100	5	100	24	100	84	95	5	100
Coproduction	8	5	3	25	0	0	0	0	0	0	0	0	5	6	0	0
Not applicable	5	3	0	0	0	0	0	0	1	20	1	42	1	1	1	20
Unclear	2	1	0	0	0	0	1	4	0	0	0	0	0	0	1	20

[a] Because the engagement level was coded for each exercise if the engagement levels differed across exercises, numbers in columns may add up to more than the total N or 100 percent for studies involving more than one exercise. For instance, in a needs and priorities study, the identification of needs could have occurred at the collaboration level, while the identification of priorities could have occurred at the coproduction level.

Importance to stakeholders was a criterion one-half of the studies used ($N = 5$) to establish research needs. One-fifth of studies ($N = 2$) used criteria relating to the potential value associated with addressing the research need (Rabinovich et al., 2017; Sanchez et al., 2010), and one study considered the burden of the disease as a criterion (Buchanan et al., 2013). The methods used to make the final determination of research needs included voting, rating, or ranking ($N = 1$); open-ending listing ($N = 1$); consensus ($N = 1$); and other types of methods (e.g., qualitative analyses, identification of cross-cutting issues across several expert panels; $N = 2$). The methods used for the final determination were either unclear or not reported for five studies.

Most of the studies (80 percent; $N = 8$) included researchers as stakeholders. More than one-half of the studies involved patients and the public (60 percent; $N = 6$) and clinicians (50 percent; $N = 5$) as stakeholders. Three studies (30 percent) included policymakers as stakeholders. Stakeholders were identified through purposive sampling ($N = 3$) and stakeholder organizations ($N = 4$). For three studies, it was unclear what methods were used to identify stakeholders. Stakeholder engagement appeared to reach the collaboration level for all 10 studies.

Research Priorities Only

Of the 23 studies that involved the determination of research priorities only, 57 percent ($N = 13$) used methods consisting of workshops, meetings, or conferences; 48 percent quantitative methods ($N = 11$); 22 percent literature review ($N = 5$); 13 percent consensus methods ($N = 3$); 13 percent review of source materials ($N = 3$); and 9 percent qualitative methods ($N = 2$). One study each reported using a framework tool and a modified CHNRI method. Six studies reported other types of methods, including value of information (Micieli et al., 2014); submission and review of working papers on priorities (WHO, 1994); and brainstorming sessions, along with information and feedback sessions (Stewart et al., 2013). The potential value of addressing the research priorities was a criterion that 48 percent of studies applied ($N = 11$), followed by cost (17 percent; $N = 4$), feasibility (17 percent; $N = 4$), importance to stakeholders (26 percent; $N = 6$), burden of disease (13 percent; $N = 3$), potential risk from inaction (13 percent; $N = 3$), alignment with organization's mission (9 percent; $N = 2$), and addresses inequities (9 percent; $N = 2$). Nine studies ($N = 39$ percent) reported applying some other type of criteria, such as implementation likelihood (Hindin, Christiansen, and Ferguson, 2013) and political acceptability (Chapman et al., 2014). Methods for making the final determination of priorities included voting, ranking, or ratings (48 percent; $N = 11$), consensus methods (22 percent; $N = 5$), and expert determinations (4 percent; $N = 1$). Other types of methods included value-of-information analysis ($N = 1$; Micieli et al., 2014) and workshop discussion or expert review ($N = 2$; Bush et al., 2011; Freedman et al., 2010). Methods for final determination were either unclear or not reported for four studies (Bochner et al., 2012; Comi et al., 2016; Hermoso et al., 2011; Mathur et al., 2014).

More than one-half the studies ($N = 13$) involved stakeholders that were not exclusively limited to researchers only. However, 78 percent ($N = 18$) of the studies did include researchers.

Nearly one-third of studies ($N = 7$) included clinicians, 22 percent policymakers ($N = 5$), 17 percent patients and the public ($N = 4$), 4 percent purchasers ($N = 1$), 9 percent product makers ($N = 2$), and 4 percent funders ($N = 1$). Stakeholders were identified through stakeholder organizations (30 percent; $N = 7$) and through purposive (22 percent; $N = 5$), snowball (9 percent; $N = 2$), or convenience sampling (4 percent; $N = 1$). For the remaining studies, the methods for recruiting stakeholders were either unclear ($N = 7$) or not reported ($N = 4$). Stakeholder engagement occurred at the collaboration level in 100 percent ($N = 23$) of the studies.

Research Gaps and Needs

The methods used in the five studies that identified both research gaps and needs included workshops, meetings, and conferences ($N = 5$), quantitative methods ($N = 2$), literature review ($N = 2$), review of source materials ($N = 2$), PICOTS ($N = 1$), qualitative methods ($N = 1$), consensus methods ($N = 1$), stakeholder consultation ($N = 1$), and review of in-progress data ($N = 1$). All the studies ($N = 5$) used importance to stakeholders as a criterion for identifying research gaps, needs, or both. Other criteria included costs ($N = 2$), feasibility ($N = 2$), burden of disease ($N = 1$), and potential value ($N = 1$). Four studies used other types of criteria, such as ethics (Carey et al., 2010), whether research need could be addressed by a randomized clinical trial (Butler et al., 2010), and likelihood that a study on the research need would provide unbiased results (Trikalinos et al., 2010). Methods for the final determination of research gaps and needs included voting, ranking, or rating ($N = 3$); expert determination ($N = 1$); and other types of methods, such as literature reviews and stakeholder input (Carey et al., 2010; Trikalinos et al., 2010).

The exercises included the identification of research needs, therefore, by definition, all the studies included stakeholders other than researchers. Nonetheless, most of the studies involved researchers ($N = 4$) and clinicians ($N = 4$). Funders ($N = 3$), patients and the public ($N = 2$), payers ($N = 2$), and product makers ($N = 1$) were also included as stakeholders. Methods for identifying stakeholders included convenience sampling ($N = 1$) and stakeholder organizations ($N = 2$). Four studies contained descriptions that were unclear about how certain stakeholder groups were recruited. All the studies ($N = 5$) reported a level of stakeholder engagement characterized as collaboration.

Research Gaps and Priorities

Of the 24 studies that contained exercises that involved the identification of both gaps and priorities, 46 percent had used quantitative methods ($N = 11$) and reviews of source materials ($N = 11$). Approximately a one-quarter used methods involving literature reviews ($N = 7$), the CHNRI process ($N = 6$), and workshop, meetings, or conferences ($N = 5$). The following methods were also documented: consensus methods (17 percent; $N = 4$), qualitative methods (17 percent; $N = 4$), PICOTS (13 percent; $N = 3$), stakeholder selection of outcomes (13 percent;

$N = 3$), and review of in-progress data (9 percent; $N = 2$). Importance to stakeholders ($N = 15$) and potential value ($N = 12$) were criteria one-half of the studies used to identify research gaps and priorities. Studies also described applying criteria related to feasibility (38 percent; $N = 9$), burden of the disease (25 percent; $N = 6$), addressing inequities (29 percent; $N = 7$), cost (17 percent; $N = 4$), patient centeredness (4 percent; $N = 1$), and alignment with organization's mission (4 percent; $N = 1$). Methods related to making the final determination of research gaps and priorities included voting, ranking, or rating (79 percent; $N = 19$); expert determination (29 percent; $N = 7$); open-ended listing (13 percent; $N = 3$); and consensus (13 percent; $N = 3$).

Stakeholders other than researchers participated in the large majority of studies focused on the identification of research gaps and priorities (75 percent; $N = 18$). Researchers (83 percent; $N = 20$) and clinicians (71 percent; $N = 17$) were stakeholders who were more widely represented across studies. Patients (42 percent; $N = 10$), funders (29 percent; $N = 7$), payers (25 percent; $N = 6$), policymakers (25 percent; $N = 6$), and product makers (13 percent; $N = 3$) were other stakeholders that participated in the research gap and priority exercises but to a lesser extent. Stakeholders were identified through purposive sampling (42 percent; $N = 10$), stakeholder organization (33 percent; $N = 8$), convenience (33 percent; $N = 8$), and snowball sampling (13 percent; $N = 3$). All the studies ($N = 24$) were characterized by stakeholder engagement at the collaboration level.

Research Needs and Priorities

Exercises involving the identification of both needs and priorities constituted the largest number of studies that were associated with potential or actual funding ($N = 88$). The most common method of identifying needs and priorities was the JLA PSP approach, which one-half of the studies adopted (53 percent; $N = 46$). Additional strategies included quantitative methods (25 percent; $N = 22$); workshops, meetings, or conferences (17 percent; $N = 15$); qualitative methods (16 percent; $N = 14$); consensus methods (13 percent; $N = 11$); literature reviews (8 percent; $N = 7$); review of in-progress data (7 percent; $N = 6$); review of source materials (6 percent; $N = 5$); CHNRI (5 percent; $N = 4$); stakeholder consultation (3 percent; $N = 3$); ENHR method (2 percent; $N = 2$); and evidence mapping (1 percent; $N = 1$).

The vast majority of studies (94 percent; $N = 83$) used the importance to stakeholders as a guiding criterion to determine research needs and priorities. Criteria related to potential value (18 percent; $N = 16$), feasibility (13 percent; $N = 11$), burden of disease (5 percent, $N = 4$), addresses inequities (5 percent; $N = 4$), patient centeredness (3 percent; $N = 3$), alignment with organization's mission (1 percent; $N = 1$), and potential risk from inaction (1 percent; $N = 1$). Methods used for the final determination of research needs and priorities most often involved voting, ranking, or rating (55 percent; $N = 48$) and open-ended listing (55 percent; $N = 48$), followed by other consensus methods (43 percent; $N = 38$).

Nearly all the studies (98 percent; $N = 86$) included stakeholders other than researchers, given that the exercises involved the identification of research needs. Clinicians were the

stakeholder group most widely represented as participants in 89 percent (N = 78) in the studies. Patients were the next most common stakeholder group, with involvement in 81 percent (N = 71) of the studies. Researchers participated in a little more than one-half of the studies (52 percent; N = 46). A smaller proportion of studies included policymakers (20 percent; N = 18), funders (13 percent; N = 11), product makers (8 percent; N = 7), and purchasers (3 percent; N = 3) as stakeholders. A majority of studies (72 percent; N = 63) identified stakeholders through stakeholder organizations. Twenty-four percent of studies (N = 21) used purposive sampling, and 11 percent (N = 10) used snowball sampling. Stakeholder engagement was characterized as occurring at the collaboration level for a predominant proportion of studies (95 percent; N = 84) and at the coproduction level for a smaller proportion of studies (6 percent; N = 5).

Research Gaps, Needs, and Priorities

All five studies that involved the identification of research gaps, needs, and priorities used quantitative methods (N = 5) and reviews of source materials (N = 5). Literature reviews and qualitative methods were reported as methods in three and four studies, respectively. Four studies convened workshops, meetings, or conferences. One-half of the studies reported methods involving consensus methods (N = 3), stakeholder consultation (N = 2), reviews of in-progress data (N = 2), and stakeholder selection of outcomes (N = 2). Four studies applied importance to stakeholders as a criterion in identifying research gaps, needs, and priorities. Potential value (N = 4) and feasibility (N = 4) also served as criteria. To make the final determination of research gaps, needs, and priorities, three studies used methods involving voting, ranking, or rating, and three studies referred to the use of consensus methods.

Given that the identification of research needs was one of the included exercises, five studies included stakeholders other than researchers. Clinicians participated as stakeholders in all five studies. Researchers (N = 5), patients and the public (N = 4), and policymakers (N = 1) were also included as stakeholders. Purposive (N = 3) and convenience (N = 3) sampling were used to identify stakeholders. Stakeholder engaged occurred at the collaboration level for all studies (N = 5).

To What Extent Have Approaches Been Used by Research Funding Organizations and What Was the Impact?

In this next section, we describe the extent to which research funding organizations have used these approaches. First, we provide an overview of the methods research funding organizations supported or used in all the studies (see Appendix C). Then, we summarize the extent to which the effectiveness of these methods has been replicated and evaluated.

Overview of Approaches Used or Supported by Research Funding Organizations

Across the 167 studies that conducted health research gap, need, or priority exercises that contributed to potential or actual funding decisionmaking, the most frequently used method

involved the convening of workshops, meetings, or conferences (37 percent; $N = 61$). Approximately one-third of studies used quantitative methods (32 percent; $N = 54$) or the application of the JLA PSP approach (28 percent; $N = 46$). This was followed by methods involving literature reviews (17 percent; $N = 29$), qualitative methods (17 percent; $N = 28$), consensus methods (13 percent; $N = 22$), and reviews of source materials (15 percent; $N = 25$). Less than 10 percent of studies engaged in methods related to reviews of in-progress data (7 percent; $N = 12$), CHNRI (7 percent; $N = 11$), stakeholder consultation (4 percent; $N = 7$), PICOTS (3 percent; $N = 6$), ENHR method (1 percent; $N = 2$), systematic reviews (1 percent; $N = 2$), and evidence mapping (1 percent; $N = 1$).

The criterion most widely applied across studies to establish research gaps, needs, and priorities was the importance to stakeholders (72 percent; $N = 120$). Nearly 30 percent of the studies ($N = 49$) considered the potential value, and 18 percent ($N = 30$) addressed the feasibility of carrying out the research as guiding criteria. Burden of disease (9 percent; $N = 15$ percent), addressing inequities (8 percent; $N = 13$), costs (6 percent; $N = 10$), alignment with the organization's mission (3 percent; $N = 5$), and patient centeredness (2 percent; $N = 4$) were adopted as criteria to a lesser extent across studies.

With respect to the methods for making the final determination of research gaps, needs, and priorities, approximately one-half of studies (51 percent; $N = 84$) used methods related to voting, ranking, and rating. One-third of the studies adopted consensus methods (32 percent; $N = 53$) and open-ended listing (31 percent; $N = 52$). Only 7 percent ($N = 12$) of studies used expert-determined methods to make final determinations.

Researchers constituted one of the largest stakeholder groups, with representation across more than one-half of the studies (66 percent; $N = 110$); they were second only to clinicians, who participated as stakeholders in 69 percent ($N = 116$) of the studies. Stakeholders representing patients and the public were involved in 59 percent ($N = 98$) of the studies. A smaller proportion of studies included policymakers (20 percent; $N = 33$), funders (14 percent; $N = 24$), product makers (8 percent; $N = 13$), payers (5 percent; $N = 9$), and purchasers (2 percent; $N = 4$) as stakeholders. Stakeholder organizations were the predominant vehicle through which nearly one-half of the studies (51 percent; $N = 86$) used to identify stakeholders. About one-quarter of studies (26 percent; $N = 43$) relied on purposive sampling, and another 11 percent ($N = 19$) relied on convenience sampling. Only 9 percent ($N = 15$) of studies resorted to snowball sampling as an option to identify stakeholders. With respect to stakeholder engagement, 92 percent (153 studies) reported stakeholder involvement occurring at the collaboration level and only 5 percent (eight studies) at the coproduction level.

Our gray literature search on top health research funding organizations inside and outside North America revealed that very little specific information is available on the methods, criteria, and stakeholder involvement in the research prioritization process (see Appendix D). Most of the organizations posted information about their research priorities but did not provide detailed information about the methods and processes involved in identifying priorities. More often,

information about the criteria used to review and select applications for research funding was made available.

Impact and Replication

Only a small fraction of studies—seven of the 167 (4 percent)—reported some type of impact evaluation (Bennett et al., 2010; Buckley, Grant, and Glazener, 2013; Elberse et al., 2012; Fun et al., 2019; Husereau, Boucher, and Noorani, 2010; Mador et al., 2016; Sanders et al., 2010). More than one-third of studies (37 percent; $N = 62$) replicated methods that had been used in other studies. The JLA PSP approach was the method that figured most prominently among methods that had been replicated. Of the 62 studies using methods that had been replicated, 46 (74 percent) involved the JLA PSP approach. The CHNRI approach was the next most frequently replicated method ($N = 11$; 17 percent). Three of the replication studies adopted the World Café approach (MacFarlane et al., 2017; Nelson et al., 2018; Restall et al., 2016). One study each had implemented methods related to the Dialogue model (Abma and Broerse, 2010) and the ENHR method (Uneke et al., 2013), which had been used in prior studies.

Challenges or Limitations Associated with Approaches to Identify Research Gaps, Establish Research Needs, and Determine Research Priorities

More than one-half of the studies (97 of 167) reported challenges or limitations associated with the health research gap, needs, or prioritization exercises. Detailed data abstractions of the challenges or limitations that studies noted appear in the evidence table in Appendix C. This section summarizes the major challenges and limitations that studies documented. The challenges and limitations that studies reported can be categorized into two broad domains: limitations related to the representativeness of findings and challenges associated with the methods used.

Limitations Related to the Representativeness of Findings

Limitations in the representativeness of study findings were attributed to two main factors: the composition of stakeholders and the level of stakeholder participation. Facets of the composition of stakeholders that were identified as potentially biasing or compromising the representativeness of study results included the following:

- There was concern about the exclusion of a particular stakeholder group, e.g., patients and caregivers (Mehand et al., 2018; Nelson et al., 2018; Saldanha et al., 2017).
- There was concern about unequal representation across stakeholder groups (e.g., lower number of carers than clinicians) (Finer et al., 2018; van Middendorp et al., 2016).
- There was uncertainty over whether stakeholders were characteristic or representative of the population they were representing (Claassen et al., 2014; Fun et al., 2019; Heazell et al., 2015; Khazai et al., 2019; Parker et al., 2019; Stephens et al., 2015). For example, were stakeholders were representative of sociodemographically diverse patients, e.g., minority ethnic populations (Doolan-Noble et al., 2019; Hsieh et al., 2017; Lough et al.,

2018; Morris et al., 2018; Tong et al., 2008); relevant clinical providers and professions (Kellum et al., 2008; Morris et al., 2018; Nelson et al., 2018); and the range of expert input (Colagiuri, Boylan, and Morrice, 2015; Haider et al., 2016; Khazai et al., 2019). Some studies noted potential biases inherent with the selection of experts (Gregório et al., 2012; Tomlinson et al., 2014).

- Small sample sizes or low numbers of stakeholders were cited as a concern because the input of individual stakeholders could substantially influence overall results or may not reflect the full range of perspectives (Al-Khatib et al., 2015; Cottrell et al., 2012; Bochner et al., 2012; Lewis et al., 2012; Lowry et al., 2012; Rudan et al., 2018; Singh, 2014; Steele et al., 2008).

Variations in the level of stakeholder participation were also noted as potentially influencing the representativeness of exercise results:

- low response rates or nonresponse from stakeholder groups (Eleftheriadou et al., 2011; Gordon et al., 2017; Gregório et al., 2012; Hindin, Christiansen, and Ferguson, 2013; Layton et al., 2015; Lewis et al., 1999; Lewis et al., 2012; Longworth et al., 2011; Panchal et al., 2018; Saldanha et al., 2017)
- unknown response rate or representativeness particularly in the case of web-based surveys open to the general public (Britton et al., 2017; Hart et al., 2017; Heazell et al., 2015; Mitnick et al., 2016; Rowe et al., 2014)
- differential response across stakeholders, e.g., lower response rates among patients and family members; certain stakeholder groups being more dominant or providing more voluminous input (Gaynes et al., 2012; Healy et al., 2018; Hibbs et al., 2019; Morris et al., 2018; Narahari et al., 2017; Pollock et al., 2012; Pollock, St. George, and Firkins, 2014; Siegfried, Carbone, et al., 2017)
- representativeness may have been limited by mode of administration, e.g., web-based surveys biased toward individuals with internet access (Khan et al., 2017; Lough et al., 2018; Mollan et al., 2019)
- exercises that required multiple rounds or phases and the lack of consistent and sustained engagement that could have limited the representativeness of a study, e.g., small number of participants in the final prioritization workshop (Chapman et al., 2014; Claassen et al., 2014; Fischer et al., 2015; Lophatananon et al., 2011; Knight et al., 2016)
- difficulties engaging certain groups, e.g., young people; larger organizations (Macbeth et al., 2017; Morris et al., 2015; Tomlinson, Jordans, et al., 2017).

Challenges Associated with Methods

A number of issues were related to the methods used, including the following:

- challenges reaching consensus or agreement particularly when there is a broad range or diversity of stakeholder experience (Carey et al., 2013; Fischer et al., 2015; Panchal et al., 2018; Stewart et al., 2013)
- nonexpert stakeholder groups that did not feel fully prepared or knowledgeable to provide informed decisions (Chalkidou et al., 2009; Lavigne et al., 2017)
- identification of research gaps, needs, and priorities that were broad or unspecific, which made how to determine the appropriate research response unclear (Buckley, Grant, and

Glazener, 2013; Eleftheriadou et al., 2011; Heazell et al., 2015; Paskins et al., 2017; Steele et al., 2008)

- a large number of identified research needs (Carey et al., 2013)
- inconsistencies in the methods used, such as in the taxonomies used to categorize research questions, criteria used for prioritization, and the implementation of processes between different groups (Chapman et al., 2014; Elberse et al., 2012; Khazai et al., 2019; Macbeth et al., 2017; Owlia et al., 2011; Wazny et al., 2013)
- that parts of the process might have resulted in lost ideas or information (e.g., consolidation of related themes) (Britton et al., 2017; Hart et al., 2017)
- methods that were time-consuming or affected by time constraints (Carey et al., 2013; Chalkidou et al., 2009; Chapman et al., 2014; Longworth et al., 2011; Lough et al., 2018; Oortwijn et al., 2002; Sanders et al., 2010)
- longevity of findings as opinions and stakeholder representatives may change over time (Colagiuri, Boylan, and Morrice, 2015; Husereau, Boucher, and Noorani, 2010).

4. Discussion

In this final chapter, we summarize the main results, organized by review question and objectives. In describing the characteristics of methods to identify health research gaps, needs, and priorities, we first discuss two major observations: the varied mix of approaches that are marked by a preponderance of multiple, rather than singular, standalone exercises and the inconsistent categorization of research gaps, needs, and priorities. Given that our review identified seven different types of approaches, some with only a few studies (e.g., only five studies for approaches involving gaps and needs), we provide only brief summaries of the most common methods used for each of the approaches. However, in describing the extent to which methods research funding organizations have used, we summarize the range of methods, including practices related to the involvement of stakeholders and the criteria used in final determinations across all the studies that have been linked to actual or potential funding decisionmaking. We also report on the extent to which methods have been evaluated for their effectiveness and have been replicated. The remaining sections of this chapter summarize the limitations and challenges that have been documented when conducting health research gap, needs, and prioritization exercises; discuss the limitations of our scoping review; and offer our conclusions.

What Are the Characteristics of Methods to Identify Research Gaps, Establish Research Needs, and Determine Research Priorities?

This scoping review has highlighted the complexities involved in characterizing methods to identify research gaps, needs, and priorities, given the varied permutations of approaches and the inconsistent application of taxonomies to classify approaches. Our scoping review revealed that approaches to identifying health research gaps, needs, and priorities are much less likely to occur as discrete processes and, more often than not, involve combinations of exercises. Approaches encompassing multiple exercises (i.e., gaps and needs; gaps and priorities; needs and priorities; gaps, needs, and priorities) were far more prevalent than standalone exercises (73 percent versus 27 percent). Moreover, one particular type of approach involving multiple exercises—identification of both research needs and priorities—comprised more than one-half of all the studies we examined (88 of 167 studies). These findings differ from Nyanchoka et al., 2019, a recent scoping review in which studies of standalone exercises related to the identification of gaps outnumbered studies involving both gap identification and prioritization. However, there are key differences between our review and the prior scoping review. Nyanchoka et al., 2019, noted a study limitation, that the definition and operationalization of the term *research gap* varied widely across studies and that their review of methods for identifying research gaps and

determining priorities relied on author definitions. In contrast, our scoping review used definitions drawn from the literature (Robinson, Saldanha and Mckoy, 2011a; Saldanha et al., 2013) to categorize studies according to the exercises conducted rather than relying on author definitions.

Consequently, in some instances, our classification of studies differed from the terminology of study authors. For example, one study used the term *research gaps*, but all the exercises conducted involved patients and clinicians (Lawler et al., 2018); as a result, we classified the exercises as *research needs*. Our classification system had major implications for the tabulation of exercises related to research needs and priorities. This is because we classified the JLA PSP method as exercises related to the identification of research needs and priorities, given the involvement of nonresearcher stakeholders in the submission of important unanswered research questions. Nearly one-third of studies connected with potential or actual funding decisionmaking used the JLA PSP method, which contributed to exercises related to research needs and priorities being counted as one of the most prevalent.

In contrast, Nyanchoka et al. (2019) classified the JLA PSP method as entailing exercises related to the identification of research gaps and priorities. Other studies have regarded the JLA PSP method as mainly a standalone exercise related to research priorities only (Bryant et al., 2014; Tong, Sautenet, et al., 2017). For instance, studies using the JLA PSP method were included in a systematic review of research priority setting for organ transplantation (Tong, Sautenet, et al., 2017). Furthermore, a recently developed reporting guideline for priority setting of health research called the "Reporting Guideline for Priority Setting of Health Research (REPRISE)," (Tong, Synnot, et al., 2019) treated what Nyanchoka et al., 2019, regarded as the identification of research gaps and what our review regarded as the identification of research needs as the "identification and collection of research priorities." The lack of consensus on definitions of research gaps and research priority setting has been noted in the literature (Nyanchoka et al., 2019; Bryant et al., 2014; Tong, Synnot, et al., 2019).

Moreover, to our knowledge, no prior scoping or systematic review has been conducted on methods related to the identification of research needs. The Agency for Healthcare Research and Quality (AHRQ) EPC program issued a series of method papers related to establishing research needs as part of comparative effectiveness research (Carey, Sanders, et al., 2012; O'Haire et al., 2011; Trikalinos et al., 2011). The AHRQ EPC program defined *research needs* as evidence gaps identified within systematic reviews that are prioritized by stakeholders according to their potential impact on practice or care (Kane et al., 2012). Together, our findings underscore the need to develop and apply more-consistent taxonomy to this growing field of research that aims to understand what methods and approaches are effective at directing efforts and funds toward the most needed areas of research.

Our attempt to classify studies according to definitions in the literature resulted in the identification of seven types of approaches consisting of three singular standalone exercises (gaps, needs, and priorities only) and four multicomponent exercises (gaps and needs; gaps and

priorities; needs and priorities; and gaps, needs, and priorities). The small number of studies represented within some of the approaches makes it difficult to compare whether certain types of methods are differentially used between approaches. For this reason, in this chapter, we provide only a brief summary of the most commonly used method for each approach. In the next section, we characterize the methods used by research funding organizations by summarizing the methods used across all the studies that were linked to potential or actual funding decisionmaking.

The studies involving the identification of research gaps only all convened some type of workshop or conference as one of the primary methods. In fact, convening workshops or conferences was also the most frequently used method among the three other approaches (identification of research needs only, research priorities only, and research gaps and needs). In contrast, qualitative methods were the most frequently used by studies involving the identification of research gaps and priorities and the determination of research gaps, needs, and priorities. The JLA PSP method was the predominant method used for the most prevalent approach, identification of research needs and priorities.

To What Extent Have Methods Been Used by Research Funding Organizations and What Was the Impact?

In this section, to characterize the methods that research funding organizations have used to identify health research gaps, needs, and priorities, we synthesize the types of methods, criteria, and stakeholder involvement that studies linked to potential or actual funding decisionmaking have used. We also summarize the extent to which effectiveness of the methods has been evaluated, whether methods have been replicated, and the types of health conditions and topic areas for which exercises have been conducted.

A substantial proportion of studies adopted methods that were defined by a structured process. This may be indicative of a trend away from nonreplicable methods to approaches that afford greater transparency and replicability (Yoshida et al., 2016). More than 40 percent of studies used methods with a structured protocol, including the JLA PSP, ENHR, CHNRI, World Café, and Dialogue model. Although these protocols help ensure a more standardized process, which is essential when testing the effectiveness of methods or interventions, the application of these protocols varied. For instance, of the 11 studies that used the CHNRI method, eight involved nonresearcher stakeholders, and three did not, even though the CHNRI protocol provides specific guidance on the involvement, roles, and responsibilities of stakeholders (Rudan, 2016; Rudan, Gibson, Kapiriri, et al., 2007). Our findings are in line with those of a review of 50 CHNRI exercises that were conducted between the years 2007 and 2016, which found that 76 percent of exercises did not obtain input from stakeholders, and even among those that did, stakeholder responsibilities varied (e.g., differential involvement in the entire process from generation to scoring of research ideas; Yoshida et al., 2016). Notable drifts in maintaining

fidelity to the CHNRI method have been documented. After the first version of the CHNRI method was published in 2007–2008 (Rudan, Gibson, Kapiriri, et al., 2007; Kapiriri et al., 2007; Rudan, Gibson, Ameratunga, et al., 2008), Rudan, Yoshida, et al., 2017, found that earlier CHNRI exercises adhered to the recommended priority-setting criteria but that, by 2016, more than two-thirds of CHNRI exercises had deviated from the recommended guidelines. Variations in the application of the JLA PSP method also occurred in the studies included in our review and in a scoping review of the JLA PSP process (Nygaard et al., 2019).

Likewise, there was a great deal of heterogeneity among studies that did not use a structured protocol. Most studies administered a combination of multiple methods, which resulted in multitudinous permutations of different combinations of methods. The method used for the most studies (61 of 167; 37 percent) was the convening of workshops, meetings, or conferences. Even within this one method, operationalization was characterized by wide-ranging variation. Workshops, meetings, or conferences varied in duration (e.g., single versus multiday conferences), format (e.g., expert panel presentations, breakout discussion groups), processes (e.g., use of formal or informal consensus methods), and composition of participants (e.g., involvement of different stakeholder groups). Great diversity also characterized the operationalization of other methods (e.g., quantitative, qualitative). Overall, these findings demonstrate the immense variation occurring within structured protocols, across different combinations of disparate methods, and within individual methods.

It is also important to note that a small proportion of studies reported using literature reviews (17 percent), reviews of source materials (16 percent), or in-progress data (7 percent). However, multistep protocols, such as the JLA PSP, may have included reviews of the research literature or ongoing studies that our review did not capture. Assessing the extent to which research gap, need, or priority exercises consult the existing scientific evidence and ongoing studies is warranted so that future research can avoid duplicative efforts and to ensure the most efficient use of research funds.

The use of explicit criteria to determine health research gaps, needs, and priorities is a key component of certain structured protocols (Okello et al., 2000; Rudan, 2016) and frameworks (Viergever, Olifson, et al., 2010; Fadlallah et al., 2020). In our scoping review, the criterion applied most frequently across studies (71 percent) was importance to stakeholders. The next most frequently used criteria were potential value (31 percent) and feasibility (18 percent). Importance to stakeholders was often operationalized by asking participants to list or identify important research gaps, needs, and priorities. Our findings indicate that a significant proportion of studies incorporate stakeholder values into the identification of research gaps, needs, and exercises. However, it is important to note that researchers were included as a stakeholder group.

Studies applied the criteria markedly diverse ways. We have reported on the methods used for the final determination of health research gaps, needs, and priorities. Approximately one-half of the studies used methods involving some type of voting, ranking, or rating, and this was the most common way to make the final determination of research gaps, needs, and priorities. For

instance, participants may have been asked to vote, rank, or rate research topics using such criteria as importance, feasibility, or potential value. Approximately one-third of the studies asked participants to provide an open-ended list of research gaps, needs, and priorities. For example, in the initial phase of the JLA PSP method, a final list of research needs is determined by asking participants to submit unanswered research questions, using relative importance as the criterion. A little over one-third of the studies used consensus methods; and this entailed more-structured methods, such as the nominal group technique or Delphi method, and less well-specified methods. Consensus methods involved both quantitative and qualitative methods in which participants were asked to apply specified criteria to determine the final set of research gaps, needs, and priorities.

How studies applied criteria to identify health research gaps, needs, and priorities differed in a number of other respects. First, studies varied in whether they used one or multiple criteria. For instance, the JLA PSP method often uses a single criterion, "importance to stakeholders" (JLA, 2020), but the CHNRI method recommends five standard criteria (Rudan, 2016). In addition, studies that conducted multiple exercises (e.g., gaps and priorities) varied in whether similar or divergent criteria were applied across exercises. Similarly, studies that contained multiple phases varied in whether the same or different stakeholder groups weighed in during different parts of the process. For example, a diverse set of stakeholders may rate research topics according to criteria specified by the study, but the final set of priorities may be determined by an expert panel consisting of researchers only. Finally, exercises differed in their derivation of criteria cutoffs. These criteria included the top ten ranked research topics, ordering research topics according to mean stakeholder ratings, and applying weights to criteria based on stakeholder input on which criteria are considered most important. This level of detailed reporting on the operationalization of criteria in research gap, needs, and priority exercises may be important to better understand the effectiveness of different strategies and methods.

The importance of involving stakeholders, especially patients and the public, in research priority setting is increasingly viewed as vital to ensuring that the needs of end users are met (Natale and Gross, 2013; Clavisi et al., 2013), particularly in light of evidence demonstrating mismatches between the research interests of patients and those of researchers and clinicians (Tallon, Chard and Dieppe, 2000; Crowe et al., 2015; Kapiriri et al., 2007). In our review, clinicians (69 percent) and researchers (66 percent) were the most widely represented stakeholder groups across studies. Patients and the public (e.g., caregivers) were included as stakeholders in only 59 percent of the studies. However, only a small fraction of studies involved exercises in which stakeholders were limited to researchers only. Findings may reflect a trend away from researchers traditionally serving as one of the sole drivers of determining which research topics should be pursued. To a lesser extent, policymakers, funders, product makers, payers, and purchasers were included as stakeholders. Although the inclusion of a more diverse and larger group of stakeholders may help ensure that the values and perspectives of the broader population are more accurately represented (Kapiriri et al., 2007; Yoshida et al., 2016), there is

little guidance on how to determine which relevant stakeholder groups should be included in the process, what constitutes a representative sample, and what is the optimal size for a stakeholder group.

More than one-half of the studies reported relying on stakeholder organizations to identify participants. Partnering with stakeholder organizations has been noted as one of the primary methods for identifying stakeholders for research priority-setting exercises (Tong, Synnot, et al., 2019). Purposive sampling was the next most frequently used stakeholder identification method. In contrast, convenience sampling (e.g., recommendations from the study team, authors' professional network) and snowball sampling were not used as frequently to identify stakeholders but were documented as common methods in a prior review conducted almost a decade ago (O'Haire et al., 2011). Our review's finding that the use of stakeholder organizations is more frequent than convenience or snowball sampling may have partly been due to the more recent proliferation of published studies using structured protocols, such as the JLA PSP, which rely heavily on partnerships with stakeholder organizations. Although such methods as snowball sampling may introduce more bias than random sampling does (O'Haire et al., 2011), there are no established best practices with respect to stakeholder identification methods (Guise et al., 2013). Nearly one-quarter of studies either provided unclear or no information on stakeholder identification methods, which is consistent with previous research priority studies that have documented inconsistent and incomplete reporting of the stakeholder process (Tong, Synnot, et al., 2019).

Despite the lack of an evidence base for effective practices for stakeholder involvement and engagement in the identification of research gaps, needs, and priorities (Manafò et al., 2018), Viergever, Terry, and Matsoso, 2010, reviewed WHO's research priority–setting practices, and Guise et al., 2013, reviewed those of leading research organizations to derive principles, methods, and recommendations for stakeholder engagement. We will next address key points about limitations in stakeholder representativeness from the list at the end of Chapter 3.

With respect to ensuring a representative sample of stakeholders, both Viergever, Olifson, et al., 2010, and Guise et al., 2013, underscored the importance of listing the relevant stakeholder groups a priori during the preparatory phase of the exercise. To facilitate inclusiveness, identifying which stakeholders need to be included and why, along with their roles and responsibilities throughout the process, is critical to establishing balanced representation. Tracking the number and degree of participation of different stakeholders is also essential to monitoring and safeguarding stakeholder representativeness from recruitment to the completion of the exercise. These studies described the types of stakeholders that can potentially be involved (e.g., consumer, clinician, policymaker, researcher, funder, public) and the importance of broad stakeholder involvement but made no explicit recommendations with respect to the inclusion of specific types of stakeholders or the optimal number of stakeholders. However, patients, in particular, have been identified as being important stakeholders, given that they have been shown to have priorities different from those of researchers and clinicians (Nasser and Welch, 2013;

Yoshida et al., 2016). In addition, in the absence of specific recommendations about the optimal number of stakeholders, Yoshida et al., 2016, and Kapiriri et al., 2007 have provided general guidance on including a larger and more diverse group of stakeholders to better guarantee alignment with the values and perspective of wider society.

Guise et al., 2013 outlined a number of recommendations for improving stakeholder engagement, including the following:

- Engage stakeholders early in the process.
- Provide brief and simple informational materials before the initial engagement and in-person meetings for stakeholders who may not be familiar with the engagement process or topic area.
- Conduct icebreaker sessions during initial in-person meetings.
- Build relationships, credibility, and trust between the investigative team and stakeholders.
- Use multiple methods (i.e., in-person meeting, voting electronically).
- Ensure sufficient time to engage with all stakeholder groups.
- Document all stakeholder input.
- Use a skilled, neutral facilitator to ensure balanced participation during group discussions.
- Have a plan in place for handling disruptive stakeholders and resolving conflicts.
- For complex research topics, alleviate stakeholder burden by narrowing down the list in advance or via sequential processes.

Determining the effectiveness of health research gap, needs, and priority exercises is challenging, given that outcomes are rarely evaluated. Only seven studies mentioned conducting some type of evaluation (Bennett et al., 2010; Buckley, Grant, and Glazener, 2013; Elberse et al., 2012; Fun et al., 2019; Husereau, Boucher, and Noorani, 2010; Mador et al., 2016; Sanders et al., 2010). Although the seven studies varied with respect to the aims of the exercises, all included research priority setting as one of the exercises. One study referred to a future report that would compare the different methods used, but we were unable to locate that specific report (Sanders et al., 2010). Another study did not conduct a formal evaluation but did hold informal conversations with patients and patient representatives who had participated in an advisory process as part of a Health Council of the Netherlands effort to set a research agenda for the development of medical products. The study reported that there was evidence of impact on patient stakeholders with respect to "empowerment," which was connected to patient stakeholders' recognition that their input was reflected in research priority recommendations (Elberse et al., 2012).

The John Hopkins University EPC developed an eight-step process to systematically identify and prioritize research needs for the management of gestational diabetes mellitus (Bennett et al., 2010). This included a final step involving an evaluation of the process, in which contributors to the exercise were asked to provide input on the process and final research questions. Bennett et al., (2010) surveyed all contributors on the following: whether respondents had enough information to take part in the exercise effectively; whether the final list of research questions

met the study's objective; the comprehensiveness of local and external stakeholder groups; and whether feedback from each stakeholder type was useful. All the contributors responded to the survey, and all reported that they had sufficient information to participate effectively and that they had achieved the objective of identifying important research questions. Most contributors felt that the composition of local and external stakeholders was comprehensive. One contributor expressed that the process could have been shortened raising a question about the need for a local stakeholder group.

The evaluations that the remaining four studies carried out varied in scope, but all relied on document review and feedback from stakeholder participants to assess effects. Mador et al., 2016, adapted and used the "Nine Common Themes of Good Practice" checklist, a conceptual framework developed to plan and facilitate research priority setting, as an evaluation tool (Mador et al., 2016). The evaluation focused largely on process-oriented outcomes, such as context (i.e., longevity of the relevance of stakeholder engagement processes), inclusiveness (i.e., balanced stakeholder representation), and information gathering (i.e., whether stakeholders were provided with appropriate and useful information to aid in decisionmaking). Applying the checklist as an evaluation tool resulted in recommendations for improving the priority-setting process, which included allowing a wider audience to submit research topics, providing information resources in advance of the exercise, reducing the number of funded projects, extending time for proposal development, and focusing on building research capacity to address barriers to the implementation of research projects, The other studies evaluated the extent to which prioritized research topics were funded (Buckley, Grant, and Glazener, 2013; Husereau, Boucher, and Noorani, 2010; Fun et al., 2019). In addition, Fun et al., 2019, used the modified "Payback Framework" (Kwan et al., 2007) to assess how health research priority setting affected three domains: knowledge production (e.g., number of reports, publications, and presentations), informing policy (e.g., whether funded projects supported decision- and policymaking), and benefits to health and the health sector (e.g., anticipated effects of funded projects for quality of care and health system delivery benefits). In the Fun et al., 2019, analysis of a total of 67 research projects funded between 2011 and 2015 by the National Institutes of Health Malaysia, knowledge production indicators included 148 presentations, 33 reports, 22 research highlights, and eight publications. Key informant interviews indicated that, of 50 completed projects, 18 supported decision- and policymaking, and 30 led to policymaker engagement and/or agenda setting. With respect to benefits for health and the health sector, 36 projects anticipated effects on quality of care and 17 on health system delivery benefits.

There is no consensus on what constitutes optimal outcomes for effectiveness, which have been found to vary by discipline. For instance, health economics value efficiency, but evidence-based medicine prizes treatment effectiveness (Sibbald et al., 2009). Although the evidence base for systematic, rigorous, approaches for assessing the effectiveness of gap, needs, and priority identification exercises is still in its infancy, adapting methods for evaluating the effectiveness of research may provide a starting foundation. As described earlier, Fun et al., 2019, modified the

"Payback Framework," one of the most widely used frameworks to evaluate the outcomes of research investments, to assess those associated with Malaysia's health research-priority setting process (Gomes and Stavropoulou, 2019; Raftery et al., 2016). Alternatively, monetization models have also been developed to assess research outcomes. Largely deriving from the field of economic evaluation, monetization models estimate returns on research investments using such metrics as cost savings, money value of net health gains via cost per quality-adjusted life year, and internal rates of return (Johnston et al., 2006; Deloitte Access Economics, 2011). In a review of methods to assess research outcomes, Greenhalgh et al., 2016, identified more recent, promising approaches that have not yet been empirically validated. These include databases, realist evaluation, contribution mapping, the SPIRIT Action Framework, and the Participatory research impact model. Impact evaluations of gap, needs, and priority identification exercises could draw on the developing field of research impact evaluations.

Our findings illustrate the need for more systematic evaluations of health research gap, needs, and priority-setting exercises. The dearth of evaluations for research priority–setting exercises has been noted (Bryant et al., 2014; Hsu and Sandford, 2007), there has been less commentary on the limited evaluations of exercises related to the identification of research gaps and establishment of research needs. In one of the rare evaluations of a method to identify research gaps, AHRQ EPCs completed evaluation forms about their application of a framework developed to identify research gaps from systematic reviews (Robinson, Saldanha, and Mckoy, 2011b). The evaluation focused primarily on process-related domains, which resulted in contributing to revisions of the framework. The extent to which the evaluation of methods for the identification of research gaps, the establishment of research needs, and the determination of research priorities can be approached similarly has not been explored. Nonetheless, evaluations of the process and outcomes of methods used to identify health research gaps, needs, and priorities are needed, given that is no gold standard here and that a better understanding of the strengths, weaknesses, and effectiveness of different methods would be valuable for further refining methods. Yet, there is no guidance on what domains, processes, and outcomes should be addressed in an evaluation (Viergever, 2013). A review on conducting research in partnership with key stakeholders (e.g., providers, patients, policymakers) categorized outcomes and the effects on the researchers conducting the partnership research, stakeholders, relationships between researchers and stakeholders, the broader community or society, and the research process (Hoekstra et al., 2020).

Replicable methods are essential to building the evidence base of effective approaches to the identification of research gaps, needs, and priorities. In our scoping review, over one-third of studies replicated methods that had been used in other studies. The JLA PSP and CHNRI were the two primary methods that had been replicated across different studies. The majority of studies consisted of different combinations of methods, which may not be as amenable to replication. Factors underlying the proliferation of different one-off methods or the countless combinations of methods have not been examined, but that may be due to differing needs,

contexts, and available resources or, perhaps, to the lack of established protocols. Tong, Synnot, et al., 2019, conjectured that the Delphi method and nonreplicable consultation processes may eventually give way to more structured protocols, such as the JLA PSP and CHNRI, which provide greater transparency and replicability.

Finally, our scoping review assessed the types of health conditions and topic areas that these research gap, needs, and priority exercises addressed. More than 90 percent of studies involved exercises that were related to the identification of research gaps, needs, or priorities for physical health conditions, but only a small part of the work was dedicated to psychological health conditions. In rare instances (only two studies), approaches covered both physical and psychological health conditions. The factors underlying the disproportionate focus on physical health conditions is unclear. It is possible that this pattern merely reflects the chronic underfunding of psychological health conditions relative to physical health conditions (Christensen et al., 2011; Kingdon, 2006). Less funding goes to psychological health research, so there may be fewer opportunities or occasions that warrant research gap, needs, or priority exercises, and less funding may be available to support such exercises. Understanding whether funding decisions for physical and for psychological health research are similarly or differentially governed by more systematic, formal, processes may be important to the extent that this affects the effective targeting of research funds.

With respect to topic areas, studies were predominantly dedicated to identifying research gaps, needs, or priorities that were related to treatment (69 percent). Prevention received the second highest amount of attention (18 percent). The remaining studies were roughly equally divided between basic science; symptom management; and diagnosis, assessments, and epidemiology, with less emphasis on service delivery and models of care and on etiology and risk factors. As with the difference between physical and psychological health conditions, it is unknown whether the dominant focus on treatment is a result of disproportionate funds being allocated to this area of research or whether this reflects variations in how research areas adopt formal processes to identify research gaps, needs, and priorities. Depending on whether stakeholder input is incorporated into the selection of research areas of focus, this could reflect stakeholder interests. However, this is unlikely, given that only a few studies reported the involvement of stakeholders in the selection of topics, questions, or outcomes prior to the research gap, need, or prioritization exercises. Within the realm of mental health research in high-income countries, there has been a growing trend in the opposite direction, with more research funds being allocated to basic science (e.g., neuroscience) than treatment, but this appears to be due more to the decisions of policymakers and leaders within research funding institutions than to stakeholder influence (Lewis-Fernandez et al., 2016). This raises the question of at what point in the process stakeholders should become involved to ensure that the most relevant and needed research areas are addressed.

Unfortunately, our review of top health research funding organizations inside and outside North America revealed very limited information about the methods and processes used to set

research priorities. In contrast, much more detailed information was available on the criteria and processes involved in reviewing and selecting applications for research funding.

Challenges and Limitations Documented Among Methods to Identify Research Gaps, Needs, and Priorities

Limitations in study representativeness and the challenges associated with the methods used were the two broad themes that studies conducting health research gap, needs, and priority exercises documented. Limitations in study representativeness were primarily related to concerns about whether the exercises accurately captured the perspectives of key stakeholders. The composition of stakeholders and stakeholder engagement were the two main factors that could compromise a study's representativeness. Exclusion of particular stakeholder groups (e.g., patients), unequal representation across stakeholder groups (e.g., researchers outnumbering patients), participants who may not be representative (e.g., clinicians who are primarily researchers), and small sample sizes were all cited as characteristics of stakeholder composition that could bias findings and hinder the representativeness of studies. Aspects of stakeholder engagement could limit a study's representativeness included low response rates or nonresponse by stakeholder groups, unknown response rates, differential response across stakeholders, and variation in stakeholder engagement across different phases of the exercise and across different stakeholder groups.

The factors described as limiting the representativeness of the results of exercises to identify health research gaps, needs, and priorities are similar to those encountered when conducting research. A research study's results can be profoundly affected by the degree to which the sample characteristics are representative of the target population and by poor response rates or varying response rates across different participant groups. Failure to enlist a representative sample of stakeholders or uneven stakeholder engagement can lead to potential biases and can undermine the reliability of results. Although there is no gold standard for what constitutes a representative stakeholder sample, O'Haire et al., 2011, provided suggestions on how to assess stakeholder representation. These included tracking participation or response rates, reporting details on stakeholder engagement in each step of the exercise, and developing an a priori list of intended stakeholders that is compared with the actual response rates.

Studies attempting to identify health research gaps, needs, and priorities reported a varied litany of challenges. Interestingly, a number of studies that had recruited diverse stakeholder groups reported that this made achieving consensus more difficult (Carey et al., 2013; Fischer et al., 2015; Panchal et al., 2018; Stewart et al., 2013). Another stakeholder-related challenge involved nonexpert stakeholders who did not feel adequately prepared or equipped to participate in exercises (Chalkidou et al., 2009; Lavigne et al., 2017). An additional set of challenges touched on concerns about whether research topics were being adequately represented when many research topics were generated (Carey et al., 2013), when they were broad or unspecific

(Buckley, Grant, and Glazener, 2013; Eleftheriadou et al., 2011; Heazell et al., 2015; Paskins et al., 2017; Steele et al., 2008), or subjected to categorizing and collating processes that may have resulted in the loss of information (Britton et al., 2017; Hart et al., 2017). Practical challenges were also described, including the time-intensive nature of exercises and potential limitations in the longevity of results, given that opinions and stakeholder representatives may change over time (Colagiuri, Boylan, and Morrice, 2015; Husereau, Boucher, and Noorani, 2010). Some have suggested that, if research priority–setting exercises are repeated, they should occur in three- to five-year cycles (Dubois and Graff, 2011; Lomas et al., 2003). It is important to note that our review did not separately break out challenges by type of exercise. The majority of studies conducted multicomponent exercises, making it difficult to discern whether the challenges that were often summarized in the discussion section applied to all the exercises or only to particular ones. Certain kinds of challenges may be more relevant, depending on the particular exercise. Greater specification of the challenges associated with each phase of multicomponent exercises can provide more fine-tuned guidance and troubleshooting for future endeavors. Our findings highlight the need for greater guidance on how to effectively manage challenges that arise within research gap, needs, and priority exercises.

Limitations of the Scoping Review

The results of our scoping review should be considered in light of certain limitations. First, to be included in the review, a study had to have an explicit aim and method to identify health research gaps, needs, or priorities. Consequently, we excluded literature reviews that were solely descriptive and did not use an explicit method. This may have left out studies that may typically be classified as gap identification exercises (e.g., systematic reviews that did not apply a tool or framework to explicitly identify research gaps). Similarly, we also excluded studies that merely provided the results of exercises but no explicit information on the methods and processes used.

Second, we abstracted detailed data only from studies in which the exercises appeared to be connected to actual or potential research funding decisionmaking. By profiling approaches that were supported or used by research funding organizations, we aimed to provide a more realistic picture of the actual methods used for deciding how to allocate research funds. However, this meant that global, national, or local priority-setting exercises that could not be directly linked to research funding decisionmaking were not included for full data abstraction. Approaches governments have adopted that provide guidance on important areas of needed research that are not necessarily linked to research funding organizations may provide useful tools and methods. These include structured protocols, such as CAM and the Council on Health Research for Development (COHRED) (Ghaffar, 2009; Tomlinson, Chopra, et al., 2011). Although we did not fully abstract data on exercises that were not supported or conducted by research funding organizations, we have included text descriptions of the exercises in Appendix C.

Third, for this research we categorized approaches according to the actual exercises conducted and definitions provided in the scientific literature rather than relying on the terminology the studies used. As a result, in some instances, the category we assigned to an exercise diverged from the category the study used. For example, gap identification exercises that incorporated nonresearcher stakeholder input were categorized as *research need exercises* even if the authors used the term *research gap*. To our knowledge, this is the first scoping review of methods across the three areas of identifying research gaps, needs, and priorities. A prior scoping review on methods identifying, prioritizing, and displaying research gaps applied a different classification scheme that did not include the category *research needs* and that relied on the terminology that the studies reviewed had used to categorize exercises (Nyanchoka et al., 2019). However, we did rely on authors' self-reports to code the use of stakeholder engagement levels and consensus methods, which, in large part, could not be verified unless a comprehensive description of the procedures was available. Evidence suggests that study authors may overreport and inaccurately characterize the use of consensus methods, such as Delphi methods (Grant, Booth and Khodyakov, 2018). Moreover, our inclusion of researchers as stakeholders meant that, of the eight studies that met coproduction levels of engagement, three addressed only research gaps, and the researchers who participated in the exercises also took part in authoring the studies.

Finally, although we captured the types of methods and stakeholder involvement applied across exercises to determine health research gaps, needs, and priorities, we may not have full pictures of the multifaceted natures of many of the exercises. For example, approaches involving multiple exercises (e.g., identification of needs and priorities) may have used one set of methods to identify needs and a different set to identify priorities In our tabulation of methods, we did not distinguish which methods each exercise used but, rather, indicated whether a type of method had been used throughout any stage of the process. Moreover, one of the most common methods was the use of workshops, meetings, or conferences, but the implemented varied widely. Some studies solely described the convening of workshops, meetings, or conferences as the approach used to identify research gaps, needs, or priorities, but other studies detailed specific processes and methods that were used during workshops, meetings, or conferences (e.g., consensus methods, quantitative survey). We did not break out the different methods used within workshops, meetings, or conferences. With respect to stakeholder involvement, we reported on the methods used to identify stakeholders, the composition of stakeholders, and stakeholder level of engagement. However, we did not detail the number of stakeholders, the distribution or proportion of different stakeholder groups, and whether different stakeholders participated throughout all key stages of the exercise or only in specific processes, such information could have assisted with evaluating the representativeness of stakeholders.

Conclusions

Our scoping review highlighted the challenges of trying to characterize approaches to identifying health research gaps, needs, and priorities. Organizing this study's findings along the three categories of research gaps, needs, and priorities was not a clear-cut process. Most of the published approaches did not fall into the simple classifications of singular stand-alone exercises (i.e., gaps, needs, and priorities only) but, rather, mostly consisted of every possible combination of exercises (i.e., gaps and needs; gaps and priorities; needs and priorities; gaps, needs, and priorities). Complicating matters is the lack of commonly agreed on terminology and definitions across numerous aspects of research gap, needs, and priority identification exercises. We observed a similar lack of consensus on stakeholder-related taxonomy, including what constitutes a stakeholder, types of stakeholder groups, stakeholder identification methods, and stakeholder engagement levels (O'Haire et al., 2011; Ray and Miller, 2017). The recent development of reporting guidelines for setting priorities for health research (Tong, Synnot, et al., 2019) may facilitate more consistent and standardized taxonomy and transparency.

Nonetheless, we noted a number of patterns characterizing methods used to identify health research gaps, needs, and priorities. Among the singular exercises that aimed to identify research gaps, needs or priorities only, the most widely used method was the convening of workshops, meetings, or conferences, perhaps signaling the selection of less-intensive methods commensurate with the limited scope required of standalone exercises. The preponderance of approaches with multiple exercises over singular exercises may be indicative of a trend away from treating health research gap, needs, and priority exercises as discrete processes and a movement toward adopting comprehensive, integrated, multicomponent processes. Another possible trend is the use of structured protocols, such as the JLA PSP and CHNRI, which rivaled other frequently used methods. The standardization of health research gap, needs, and priority methods may facilitate comparison and evaluation between different approaches. Currently, our knowledge of the effectiveness of health research gap, needs, and priority exercises is very limited given the scant evaluations that have been conducted.

The goal of this scoping review is to provide researchers and those conducting exercises to identify health research gaps, needs, and priorities with a canvass of the approaches used in funding decisionmaking, which may help accelerate progress toward validating methods that ensure the effective targeting of research funds. Approaches to identifying health research gaps, needs, and priorities are heterogeneous with respect to the methods and processes used. Given the limited evaluations that have been conducted in the literature on health research gap, needs, and priority identification methods, the effectiveness of various approaches is unknown. The lack of consensus on conceptual frameworks, taxonomy, and evaluation methods is impeding progress toward building a needed evidence base.

Appendix A. Description of Selected Methods with Structured Protocols

Child Health and Nutrition Research Initiative

With funding support from the World Bank, the Global Forum for Health Research developed the CHNRI method in 2007 with the original aim of assisting priority setting in health research to improve child health and nutrition (Rudan, Gibson, Ameratunga, et al., 2008). The CHNRI method contains 15 steps:

1. *Select managers of the process*—The managers are a small team of individuals who represent investors in health research and their interests and visions. Their role is to assess the likelihood that proposed research will reduce disease burden within the context that investments are being made.
2. *Specify context and risk management preferences*—The managers specify the context in space (i.e., target population); disease, disability, and death burden; context in time (i.e., time between intervention and detectable disease reduction); stakeholders (i.e., whose values and interests should be respected when setting research investment priorities); and risk management preferences (i.e., investment strategy to manage risk preferences such as diversifying across research options or focusing on a few expensive high-risk research options).
3. *Discuss criteria for setting health research priorities*—The managers list potential priority-setting criteria that are appropriate to the specific context (e.g., answerability, novelty, potential for translation, affordability, sustainability, equity, potential impact).
4. *Choose a limited set of the most useful and important criteria*—The managers select priority-setting criteria from the longer list that should discriminate between competing research options.
5. *Develop means to assess the likelihood that proposed research options will satisfy selected criteria*—A group of technical experts (e.g., methodologist, statistician, health impact assessor) is invited to work with managers to list, check, and score research options.
6. *Systematic listing of a large number of proposed health research options*—A list is categorized according to research domain (e.g., research to assess burden, to improve performance of existing capacities, to develop new capacities), research avenue (e.g., measure burden, health policy analysis, basic research), and research option (e.g., duration of research).
7. *Prescore all competing research options*—The technical experts ensure that the research options can be scored against proposed criteria.
8. *Score health research options using the chosen set of criteria*—The technical experts score research options against criteria selected by managers.
9. *Calculate intermediate scores for each health research option*—Intermediate scores are computed using the technical experts' ratings.
10. *Obtain further input from stakeholders*—Stakeholders score selected criteria and can set minimal thresholds for intermediate scores to achieve for funding priority and differentially weight selected criteria.

11. *Adjusting intermediate scores taking into account the values of stakeholders*—Research options that do not achieve minimal thresholds are disqualified; weighted intermediate scores are computed.
12. *Calculating overall priority scores and assigning marks*—These are based on the ratio of weighted technical expert scores to weighted stakeholder scores.
13. *Performing an analysis of agreement between scorers*—The level of agreement between technical experts for each research option is assessed using a Kappa calculation.
14. *Linking computed research priority scores with investment decisions*—Priority scores are used to design investment strategy or modify already existing investment portfolio to reduce risk and/or increase returns on investments.
15. *Feedback and revision*—Changes in context over time (e.g., changes in disease burden, stakeholders' values, risk management preferences) are accounted for by adding further research options, incorporating additional criteria, and rescoring research options in redefined context and by revising thresholds and weights on intermediate scores.

Essential National Health Research

In 2000, COHRED developed the ENHR approach for prioritizing country-specific and global health research that is focused on equity and social justice (see COHRED, 1997, for the manual). The ENHR method has three main phases:

- preparatory work

  – *Identify leaders* who are acceptable to all major stakeholders and that are motivating, committed to ENHR, knowledgeable about how and where to access information and resources, and able to understand existing stakeholder groups and civil leadership at different levels. Typically, a working group or task force is established, with government and academe playing significant roles. Health service providers and communities are then consulted and involved in further planning.
  – *Raise awareness with stakeholders* by conducting open meetings to develop understanding of ENHR through discussions with important institutions, groups, and leaders. The key aim is to create demand for research.
  – *Reach agreement with stakeholders*, including solidification of working groups and workplan (e.g., time frame, areas and modalities of cooperation, roles and responsibilities).

- elements of priority setting

  – *Situational analysis* consists of the systematic and scientific assessment of health status (e.g., country's state of health, main health problems), health systems (i.e., current status, deficiencies, performance), health research systems (e.g., areas of research being addressed, sources of funding), user-felt needs, and user demands and values.
  – *Identification of research areas* creates initial lists of research topics based on situation analysis and stakeholder input.

- *Developing criteria for priority setting* involves building consensus on criteria and a system for scoring research areas and deciding whether to assign equal or differential weights to each criterion based on stakeholder values and preferences.
- *Finishing research prioritization process* entails scoring each research topic and ranking the topics by these scores.

- follow-up activities

  - *In research problem specification*, a designated core group or task force translates research areas into specific research questions.
  - *Dissemination of priority research agenda* involves publishing priority ideas, disseminating information as soon as practicable, and eliciting additional inputs that could be used to amend the research agenda.
  - *Implementation of research agenda* requires identifying resource requirements (e.g., government, donors), determining timelines, and identifying potential research groups for implementation; establishing peer review for the priority-setting process; providing a forum for revising and updating the research agenda; and reviewing the results of health research (e.g., producing policies that promote equity in health, ongoing assessment of outcomes among different social groups).

James Lind Alliance Research Priority Setting Partnership

The JLA PSP was established in 2004 and is overseen by the National Institute for Health Research (NIHR) Evaluation, Trials and Studies Coordinating Centre in the UK. The JLA PSP brings together patients, caregivers, and clinicians on an equal basis to identify and prioritize uncertainties (i.e., unanswered questions) about specific conditions or treatments (see JLA, 2021, for the guidebook). The process involves the following key stages:

1. *initiation*—defining and scoping the health issue, identifying partners, and establishing a steering group
2. *consultation*—gathering uncertainties and research questions from stakeholders via standard methods (e.g., surveys, focus groups) and scanning research recommendations (e.g., Cochrane reviews, clinical practice guidance)
3. *collation*—categorizing and refining research questions and checking evidence bases to verify that questions have not already been addressed
4. *prioritization*—setting interim priorities to yield a short list of research questions (often carried out by online survey and voting) and setting final priorities, typically via a workshop using nominal group technique and a plenary session to identify a top-ten set of research questions.

World Café Approach

The World Café started in 1995 during a small group meeting of business and academic leaders in a home in California (World Café, undated). The original plan was to hold a large group circle discussion outside. Because of rain, however, participants broke into small groups inside a home. This was the origin of the World Café method. This method underscores

multistakeholder engagement and multigenerational collaboration. One of its key principles is that conversation serves as a core process for positive systematic change. This method has grown globally and has been used by communities, corporations, and government and public institutions around the world, including Apple, Chevron, Cisco, Google, Kaiser Permanente, the Kellogg Foundation, and the National Science Foundation. The method has the following elements:

1. *Setting*—The first step involves creating a special environment, most often modeled after a café; for instance, small round tables covered with butcher block paper, colored pens, and an optional talking stick item.
2. *Welcome and introduction*—The host begins with a welcome and introduction to the World Café process, setting the context, sharing the etiquette, and putting participants at ease.
3. *Small group rounds*—Small group rounds of three, 20-minute, rounds of conversations are facilitated. At the end of 20 minutes, each member of the group moves to a different new table.
4. *Questions*—Each round is prefaced with a question crafted for the specific context and purpose of the World Café. The same questions can be used for more than one round or may build on each other to focus the conversation or guide the direction.
5. *Harvest*—After the small groups, individuals are invited to share insights and results with the large group. The results are presented visually, often using a graphic recording in front of the room.

Appendix B. Search Strategies

This appendix contains the search strategies used for the database and gray literature search.

General Database Search, from 1946 to August 19, 2019

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily (1946 to August 19, 2019)

Limits: English Language Only, Humans
Search Strategy:
1 ((Research adj2 Gap*) or (evidence adj2 gap*) or (knowledge adj2 gap*)).ti. (1525)
2 ((determin* or evaluat* or identif* or scope* or scoping) adj3 (gap or gaps) adj3 (research or knowledge or funding)).ti. (96)
3 (Research adj2 need*).ti. and exp research/ (881)
4 (manag* adj3 funding).ti. (27)
5 (setting adj2 priorit*).ti. (1128)
6 (allocat* adj3 fund*).ti. and (research* or project*).ab, ti. (34)
7 ((agenda adj3 setting) and (research or funding or priorit*)).ab, ti. (431)
8 ((decision adj2 making) and funding).ti. (11)
9 "gap generation".ab, ti. (9)
10 (select* adj3 (topic or topics)).ti. (298)
11 "future research".ti. (2061)
12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 (6331)
13 limit 12 to english language (6080)
14 limit 13 to humans (4388)
Results: 4,388 – internal dups = 4,378

Database: PsycINFO

Limits: English; NOT animal; Academic Journals
Search Run: August 20, 2019
Search Strategy:
TI ((research W2 gap*) OR (evidence W2 gap*) OR (knowledge W2 gap*))
OR
TI ((Determin* OR evaluat* OR identif* OR scope* OR Scoping) W3 (gap or gaps) W3 (research OR knowledge OR funding))
OR

TI (research W3 need) AND DE "Experimentation"
OR
TI (Manage* W3 funding)
OR
TI (setting W2 priorit*)
OR
TI (allocat* W3 fund*) AND (TI (research* OR project*) OR AB (research* OR project*))
OR
(TI (agenda W3 setting) OR AB (agenda W3 setting)) AND (TI (research OR funding OR priorit*) OR AB (research OR funding OR priorit*))
OR
TI (decision W2 making) AND TI (funding)
OR
TI ("gap generation") OR AB ("gap generation")
OR
TI (select* W3 (topic OR topics))
OR
TI ("future research")
Results: 1,717 – duplicates = 1,112

Database: Web of Science

Limits: English Only; SCI ONLY; Articles; Reviews
Search Run: August 21, 2019
Search Strategy:
(TI=("Research Gap*") OR TI=("evidence gap*") OR TI=("knowledge gap*"))
OR
((TI=("determine gap*") OR TI=(determining gap*)) AND TS=(research OR knowledge OR funding))
OR
(((TI=("evaluate gap*") OR TI=("evaluating gap*") OR TI=("evaluated gap*")) AND TS=(research OR knowledge OR funding)))
OR
((TI=("scoped gap*") OR TI=("scopes gap*") OR TI=("Scoping gap*")) AND TS=(research OR knowledge OR funding))
OR
TI=("research need*")
OR
TI=("manage funding") OR TI=("managing funding") OR TI=("Manages funding") OR TI=("managed funding")

OR

(TI=("setting priorit*") OR TI=("priority setting"))

OR

((TI=("allocate fund*") OR TI=("allocates fund*") OR TI=("allocated fund*")OR TI=("fund allocat*")) AND (TS=(research* OR project*)))

OR

(TS=("agenda setting") OR TS=("set agenda")) AND TS=(research OR funding OR priorit*)

OR

(TI=("decision making") OR TI=("making decision*")) AND TI=(funding)

OR

TS=("gap generation")

OR

TI=("selects topics") OR TI=("selected topics") OR TI=("selected topic") OR TI=("selected topics"))

OR

TI=("future research"))

AND

TS=(health*)

Results: 1,352 – duplicates = 472

TOTAL: 5,957

Additional Searches

The following additional searches were conducted using the strategies of Nyanchoka et al., 2019.

Database: MEDLINE

1	Biomedical Research/ or Evidence-Based Medicine/
2	(medical research or health research or experimental medicine or investigational medicine or health-care* or healthcare* or public health or clinical health).tw.
3	1 or 2
4	Knowledge/ or Research
5	(research gap* or evidence gap* or knowledge gap* or prioritization gap* research uncertainties) and (identifying or displaying or determine or recognize or show or demonstrate or translate). tw.
6	4 or 5
7	Humans/
8	(wom#n or men or male or female or child* or adult or infant*).mp.
9	7 or 8

10	3 and 6 and 9
11	limit 8 to (english language and humans and "reviews (best balance of sensitivity and specificity)")

Database: PUBMED

#Search (((((research OR evidence OR knowledge OR prioritization) gap*)) AND (identifying OR displaying)) AND (health research OR clinical health OR public health)
Sort by: Relevance Filters: published in the last 10 years; Humans; English

Database: EMBASE

1	medical research/
2	public health/
3	(medical research or health research or experimental medicine or investigational medicine or health-care* or healthcare* or public health or clinical health).tw.
4	1 or 2 or 3
5	Knowledge/ or Research
6	(research gap* or evidence gap* or knowledge gap* or prioritization gap* research uncertainties) and (identifying or displaying or determine or recognize or show or demonstrate or translate). tw.
7	5 or 6
8	Humans/
9	(wom*n or men or male or female or child* or adult or infant*).tw.
10	6 or 7
11	4 and 7 and 10
12	limit 9 to (human and embase and "reviews (best balance of sensitivity and specificity)" and yr="2006 -Current")
13	limit 10 to english

Database: Cochrane Library

D	Search
#1	MeSH descriptor: [Biomedical Research] explode all trees
#2	(medical research or health research or experimental medicine or investigational medicine or health-care* or healthcare* or public health or clinical health):ti, ab, kw
#3	MeSH descriptor: [Evidence-Based Medicine] explode all trees
#4	#1 or #2 or #3
#5	MeSH descriptor: [Knowledge] explode all trees
#6	MeSH descriptor: [Research] explode all trees
#7	(research gap* or evidence gap* or knowledge gap* or prioritization gap* research uncertainties) and (identifying or displaying or determine or recognize or show or demonstrate or translate): ti, ab, kw
#8	#5 or #6 or #7

#9	MeSH descriptor: [Humans] explode all trees
#10	(wom*n or men or male or female or child* or adult or infant*): ti, ab, kw
#11	#9 or #10
#12	#3 and #8 and #11 Publication Year from 2007 to 2017

Database: Scopus

(TITLE-ABS-KEY (research AND gap*) OR TITLE-ABS-KEY (evidence AND gap*) OR TITLE-ABS-KEY (knowledge AND gap*) AND TITLE-ABS-KEY (identifying) OR TITLE-ABS-KEY (displaying) AND TITLE-ABS-KEY (health AND research) AND (clinical AND health) AND (public AND health) AND (humans)) AND (LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013) OR LIMIT-TO (PUBYEAR , 2012) OR LIMIT-TO (PUBYEAR , 2011) OR LIMIT-TO (PUBYEAR , 2010) OR LIMIT-TO (PUBYEAR , 2008) OR LIMIT-TO (PUBYEAR , 2007)) AND (LIMIT-TO (SUBJAREA , "MEDI ") OR LIMIT-TO (SUBJAREA , "NURS ") OR LIMIT-TO (SUBJAREA , "HEAL ")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re")) AND (LIMIT-TO (LANGUAGE , "English"))

Database: Web of Science

TOPIC: (research gap*) *OR* **TOPIC:** (evidence gap*) *OR* **TOPIC:** (knowledge gap*) *OR* **TOPIC:** (prioritization gap*) *AND* **TOPIC:** (identifying) *OR* **TOPIC:** (displaying) *AND* **TOPIC:** (health research) OR TOPIC: (clinical health) OR TOPIC: (public health) *AND* **TOPIC:** (human*)

Refined by: WEB OF SCIENCE CATEGORIES: (PUBLIC ENVIRONMENTAL OCCUPATION/AL HEALTH OR HEALTH POLICY SERVICES) AND **RESEARCH AREAS:** (PUBLIC ENVIRONMENTAL OCCUPATION/AL HEALTH OR HEALTH CARE SCIENCES SERVICES) AND **LANGUAGES:** (ENGLISH) AND **PUBLICATION YEARS:** (2016 OR 2012 OR 2010 OR 2007 OR 2015 OR 2013 OR 2009 OR 2014 OR 2011 OR 2008) AND **WEB OF SCIENCE CATEGORIES:** (HEALTH POLICY SERVICES OR HEALTH CARE SCIENCES SERVICES) AND **WEB OF SCIENCE CATEGORIES:** (PUBLIC ENVIRONMENTAL OCCUPATION/AL HEALTH OR PRIMARY HEALTH CARE OR PEDIATRICS OR NURSING)

Indexes=SCI-EXPANDED, SSCI, A&HCI, ESCI Timespan=2007-2017

Database: PROSPERO Register

TITLE-ABSTR-KEY ((research gap* or evidence gap* or knowledge gap* or prioritization gap*) and (identifying or displaying or determine or recognize or show or demonstrate or

translate or research uncertainties)) and (health research or clinical health or public health) and (human).

In total, after removing overlapping references, 1,222 articles remained After Total *N* = 1,222.

Additional Searches

Additional searches included TRIP (735); Google Scholar (23); Google, Hand Searched and Expert consultation (157).

Targeted Searches for Individual Funders

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily (1946 to May 28, 2019)

Search Strategy:
1 (Research Gap* or evidence gap* or knowledge gap*).mp. (11384)
2 ((determin* or evaluat* or identif* or scope* or scoping) and (gap or gaps) and (research or knowledge or funding)).mp. (49940)
3 Research need*.mp. and exp research/ (1462)
4 (manag* and funding).mp. (9059)
5 (setting and priorit*).mp. (10219)
6 (allocat* and fund* and (research* or project*)).mp. (5030)
7 (agenda and setting and (research or funding or priorit*)).mp. (1293)
8 (decision and making and funding).mp. (2064)
9 "gap generation".mp. (9)
10 (select* and (topic or topics)).mp. (106798)
11 "future research".mp. (80509)
12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 (260820)
13 ("institut pasteur" or "wellcome trust" or "Australian National Health and Medical Research Council" or NHMRC or "UK Medical Research Council" or MRC or "Bill and Melinda Gates Foundation" or BMGF or "Howard Hughes Medical Institute" or HHMI or "Canadian Institutes of Health Research" or CIHR or "Congressionally Directed Medical Research Program" or CDMRP).ti, ab. (9138)
14 12 and 13 (607)
15 limit 14 to (english language and humans) (610)
Results: 610

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily (1946 to June 3, 2019)

Limits: English language only

Search Strategy:
1 (Research Gap* or evidence gap* or knowledge gap*).mp. (11412)
2 ((determin* or evaluat* or identif* or scope* or scoping) and (gap or gaps) and (research or knowledge or
funding)).mp. (50050)
3 Research need*.mp. and exp research/ (1464)
4 (manag* and funding).mp. (9086)
5 (setting and priorit*).mp. (10238)
6 (allocat* and fund* and (research* or project*)).mp. (5039)
7 (agenda and setting and (research or funding or priorit*)).mp. (1291)
8 (decision and making and funding).mp. (2068)
9 "gap generation".mp. (9)
10 (select* and (topic or topics)).mp. (106940)
11 "future research".mp. (80658)
12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 (261269)
13 (NIH or "national institutes of health").ti, ab. (36131)
14 12 and 13 (1638)
15 limit 14 to english language (1623)

Gray Literature Search

Google Search

Date: June 2019
Search Strategy:
National Institutes of Health (NIH) "research gaps"
National Institutes of Health (NIH) "research needs"
National Institutes of Health (NIH) "research priorities"
National Institutes of Health (NIH) "future research"
National Institutes of Health (NIH) "funding priorities"
Canadian Institutes of Health Research (CIHR) "research gaps"
Canadian Institutes of Health Research (CIHR) "research needs"
Canadian Institutes of Health Research (CIHR) "research priorities"
Canadian Institutes of Health Research (CIHR) "future research"
Canadian Institutes of Health Research (CIHR) "funding priorities"
Howard Hughes Medical Institute (HHMI) "research gaps"
Howard Hughes Medical Institute (HHMI) "research needs"
Howard Hughes Medical Institute (HHMI) "research priorities"
Howard Hughes Medical Institute (HHMI) "future research"

Howard Hughes Medical Institute (HHMI) "funding priorities"
Bill and Melinda Gates Foundation (BMGF) "research gaps"
Bill and Melinda Gates Foundation (BMGF) "research needs"
Bill and Melinda Gates Foundation (BMGF) "research priorities"
Bill and Melinda Gates Foundation (BMGF) "future research"
US Department of Defense (DoD) largest subprogram: Congressionally Directed Medical Research Program (CDMRP) "research gaps"
US Department of Defense (DoD) largest subprogram: Congressionally Directed Medical Research Program (CDMRP) "research needs"
US Department of Defense (DoD) largest subprogram: Congressionally Directed Medical Research Program (CDMRP) "research priorities"
US Department of Defense (DoD) largest subprogram: Congressionally Directed Medical Research Program (CDMRP) "future research"
US Department of Defense (DoD) largest subprogram: Congressionally Directed Medical Research Program (CDMRP) "funding priorities"
European Commission (EC) "research gaps"
European Commission (EC) "research needs"
European Commission (EC) "research priorities"
European Commission (EC) "future research"
European Commission (EC) "funding priorities"
UK Medical Research Council (MRC) "research gaps"
UK Medical Research Council (MRC) "research needs"
UK Medical Research Council (MRC) "research priorities"
UK Medical Research Council (MRC) "future research"
UK Medical Research Council (MRC) "funding priorities"
Australian National Health and Medical Research Council (NHMRC) "research gaps"
Australian National Health and Medical Research Council (NHMRC) "research needs"
Australian National Health and Medical Research Council (NHMRC) "research priorities"
Australian National Health and Medical Research Council (NHMRC) "future research"
Australian National Health and Medical Research Council (NHMRC) "funding priorities"
Wellcome Trust "research gaps"
Wellcome Trust "research needs"
Wellcome Trust "research priorities"
Wellcome Trust "future research"
Wellcome Trust "funding priorities"
Institut Pasteur "research gaps"
Institut Pasteur "research needs"
Institut Pasteur "research priorities"
Institut Pasteur "future research"

Institut Pasteur "funding priorities"

Limited to first ten articles addressing health; limited to first five pages.

Google Scholar Search

Date: June 2019
Search Strategy:
[Organization] and "research gaps"
[Organization] and "research needs"
[Organization] and "research priorities"
[Organization] and "future research"
[Organization] and "funding priorities"

Appendix C. Overview Evidence Table

Table C.1. Evidence Table for Studies Not Linked to Research Funding Decisionmaking

Author, Year	Gaps Method	Needs Method	Prioritization Method
Abachizadeh, Mohagheghi, and Mosavi-Jarrah, 2011		Quantitative emailed survey with experts	Ranked average scores for each research need to create priority list
Abu-Rmeileh et al., 2018	Consulted experts and stakeholders (email, fax, or phone)		Quantitative rating of the research questions by the experts and stakeholders using five criteria (adopted from WHO-CHNRI guidelines) and ranking of mean scores
Ajumobi et al., 2018 IkeOluwapo et al., 2017 Onyiah et al., 2018	Scoping review	Quantitative and qualitative methods with stakeholders' identified needs (online survey, self-administered paper-based survey, key informant interviews) Consulted experts to identify progress in identified research areas (two-day desk review, situational analysis workshop)	Delphi with stakeholders refined research priorities (face-to-face interview)
Ali et al., 2014		Consulted experts and stakeholders (emailed survey)	CHNRI criteria used to rank research priorities (questionnaire)
Ali et al., 2018		Consulted experts and stakeholders to identify local research capacity strengthening needs (three-day meeting)	Expert stakeholder consensus obtained on research priorities using prioritization framework (group discussions at three-day meeting)
Allsop et al., 2015			Consulted stakeholders on research priorities (face-to-face interview surveys)
Angood et al., 2015			Experts (authors) selected research questions and prioritization criteria CHNRI with experts and stakeholders (online survey)
Auais et al., 2018			Consulted experts to identify research priorities (nominal group technique and multivoting technique at an in-person think-tank meeting) Experts ranked identified priorities (online quantitative and qualitative survey)
Audulv et al., 2014	Literature review		

Author, Year	Gaps Method	Needs Method	Prioritization Method
Ayas et al., 2018		Ten participants were invited to review and present in their areas of expertise on a list of topics selected by the chairs with input from the committee. Search strategies, inclusion and exclusion criteria, and areas of discussion within each topic were described independently by each presenter. After a short presentation, the presenter and chairs facilitated a discussion with all workshop participants to achieve consensus regarding key limitations in knowledge within each topic. After the final presentation, the chairs facilitated a discussion about key knowledge gaps, which resulted in the final list of knowledge gaps and recommended key questions outlined in the major conclusions.	
Bahadori et al., 2009		Qualitative (in-depth and semistructured) interviews with experts and stakeholders identified needs	Qualitative interviews (focus groups) with experts and the analytic hierarchy process prioritized topics from identified needs
Ball et al., 2016	Experts (management team) selected research topic, goals, and relevant stakeholders (iterative and verbal discussions and online searches)		Experts selected prioritization criteria (blinded ranking); consulted stakeholders to identify priority research questions (online survey); and scored and ranked identified research questions using prioritization criteria
Banfield et al., 2014			Qualitative interviews with consumers (in-person and online focus groups) and advocates (telephone semistructured interviews)
Baris et al., 2000		Consulted experts and stakeholders to develop research agendas (three regional meetings)	
Barnato et al., 2007			Consulted experts and stakeholders (special conference symposium, simple vote count)
Bennett et al., 2012	Reviewed source material (prior systematic review) and consulted authors of the review to identify additional gaps Translated gaps into research questions using PICO—population, intervention, comparison(s), outcome(s)	Consulted local stakeholders to refine research questions and rate (Likert scale) importance (online questionnaire and in-person meeting)	Delphi with national stakeholders (online form) Consulted all stakeholders and review authors on development of conceptual framework outlining high-priority questions and outcomes (online form)
Bergsten et al., 2014		Qualitative interviews (focus group) with experts and stakeholders and individual consultations with younger stakeholders (one-on-one interview or written communication) Literature review of identified research topics	Meeting between experts and stakeholders identified priority topics

Author, Year	Gaps Method	Needs Method	Prioritization Method
Bethell et al., 2017			Modified Delphi with stakeholders (e.g., four in-person meetings, four online crowdsourcing rounds across ten stakeholder groups, literature and environmental scans, eight in-person forums, 31 educational sessions, and action research efforts with emerging community efforts)
Boeni et al., 2014	Evidence mapping		
Booth et al., 2017		Consulted experts and stakeholders (day-long planning meeting involving small group discussions and two rounds of nominal group technique)	Expert stakeholder consensus obtained during nominal group technique
Borkan and Cherkin, 1996		Researchers and clinicians invited to attend the International Forum for Primary Care Research on Low Back Pain asked to submit a list of research questions Authors grouped and categorized submissions	Nominal group technique used to reach agreement on list of research priorities
Borkan et al., 1998			Nominal group technique: survey ratings on importance of research questions; mean ratings presented and discussed at meeting; breakout small groups recommended single priority; priority list presented to entire group and each participant given three votes
Bragge et al., 2011	Evidence mapping (consulted experts, two literature reviews; mapping workshops involving nominal group technique; online survey structured by PICO; and International Classification of Functioning, Disability and Health framework to develop final research questions)		Ranking of research questions by experts and stakeholders (online survey)
Broerse et al., 2010		Dialogue model with experts and stakeholders identified topics of importance (literature survey, exploratory interviews, focus groups)	Expert and stakeholder consensus (questionnaire, Delphi rounds, final dialogue meeting)
Buckley et al., 2010		Consulted stakeholders and reviewed literature (reviews and clinical guidelines) to identify important research questions structured in PICO format	JLA PSP used to achieve expert stakeholder consensus on research priorities (nominal group technique at an in-person workshop) Reviewed literature (prior reviews) to finalize list of unanswered research questions
Burnette, 2003	Delphi (Round 1) experts identified up to five research topics		Delphi (two rounds) with experts (web-based questionnaires) Consensus scoring

Author, Year	Gaps Method	Needs Method	Prioritization Method
Carli et al., 2017	Consulted experts on the state of the science and recommendations for future research (expert panel meeting)		
Caron-Flinterman et al., 2005			Qualitative interviews (focus groups) and in-person meeting with patients identified and prioritized research needs (using urgency scores) Quantitative survey (mailed or online) with stakeholders (patients) ranked identified research priorities
Chan et al., 2001		Experts developed conceptual framework Experts (technical panel) were consulted to select research questions guided by framework (conference calls and polling) Literature review (primary studies) assessed evidence for identified research questions	Ranking (poll)
Chapman et al., 2013	Evidence mapping reviewed source materials (prior systematic reviews) to identify gaps and research questions using PICO		Experts selected prioritization criteria Delphi (two rounds) with stakeholders used to prioritize research questions (surveys) Reviewed in-progress research (trials registries) to reconcile identified priorities with existing research
Checketts et al., 2018	Reviewed source material (clinical guidelines) and developed research questions using PICO for recommendations with lowest grades Reviewed completed and in-progress research (NLM, undated, and foundation websites) for studies that fit PICO questions		
Cheifetz et al., 2012		Consulted stakeholders (health professionals) (online survey) Qualitative interviews (focus groups) with stakeholders (patients) obtained additional important research topics	Modified Delphi asked experts to prioritize proposed research topics (online form, follow-up in-person meeting, and final online poll)
Chi, 2013	Systematic review		
Chowdary et al., 2018	Delphi (Round 1) principal investigators generated research questions (electronic survey)		Delphi (Round 2) with principal investigators rated research questions (electronic survey)
Christian et al., 2015	Reviewed source material (prior systematic review) and in-progress research (e.g., via NLM, undated)		Consulted experts and stakeholders to refine and rank research gaps based on prioritization criteria (two teleconferences, email, two web-based exercises) Organized priorities using PICOTS

Author, Year	Gaps Method	Needs Method	Prioritization Method
Clavisi et al., 2013		Literature review Consulted experts to identify important clinical questions (in-person meeting, nominal group technique at a mapping workshop, online survey structured by PICO)	Stakeholders ranked research questions using predefined prioritization criteria (online survey) Identified evidence gaps for priority clinical questions via literature review, review of in-progress research (trials registries), and consultation with stakeholders (open-invitation forum and follow-up workshops)
Cobelens et al., 2008	Expert working group identified knowledge gaps via review of WHO guidelines		Expert working group ranked knowledge gaps by priority Feedback solicited from wider circle of experts Resulting research agenda discussed and endorsed during annual meeting of the working group
Costa et al., 2013			Internet-based survey (two rounds) with experts reassessed and ranked current priorities
Cotts et al., 2014	Researchers generated list of research questions through brainstorming sessions		Top 25 research questions determined by provider survey and patient community meetings and online forums; each question reranked priority by providers
Cox et al., 2017	Delphi (Round 1): experts and patients listed five important research topics		Delphi (three rounds) obtained stakeholder consensus on research priorities (online survey)
Cuschieri, Lorincz, and Nedjai, 2019			Experts selected research topics for prioritization exercise Ranking of research priorities by opinion leaders (structured survey)
Dean et al., 2013			CHNRI with stakeholders (health professionals) defined criteria and scored priority research areas (in-person meeting; email)
Degroote, Bermudez-Tamayo, and Ridde, 2018	eDelphi (three rounds) with members of an international consortium identified questions (online surveys) Scoping review		Consulted experts to identify priority topics (concept mapping at a two-day international workshop)
Diffin et al., 2017			Experts selected research topics for prioritization exercise Consulted health care professionals and carers (workshops, telephone or face-to-face interviews)
Drucker, Wang, and Qureshi, 2016	Experts and stakeholders selected topics of interest Literature review		

Author, Year	Gaps Method	Needs Method	Prioritization Method
Dunn et al., 2006		Experts (authors) conducted literature scan and scan of research capacity prior to needs assessment Consulted stakeholders (emailed online open-ended survey; eight in-person workshops)	
Dzidowska, Price, and Butow, 2010			Past qualitative interviews (focus groups via face-to-face or teleconference) with stakeholders identified top priority research areas Quantitative online survey with experts ranked priority research areas
Eccles et al., 2013		Consulted experts on research gaps and potential solutions in specific topic areas (series of workshops)	
Eckardt et al., 2017	Round 1: Delphi review of policy statement of American Academy of Nursing Round 2: scientific committee identified research areas		Delphi (Rounds 3 and 4) expert meeting and voting at a conference, ranking process
Edwards et al., 2015			Delphi (three rounds) with stakeholders (parents of child patients) identified research priorities (questionnaires)
Eliasson et al., 2014	Literature review	Quantitative survey with stakeholders (members of consensus group) rated issues for relevance and need for further research	Stakeholder consensus on research priorities obtained (meeting, follow-up email and skype discussions, online survey)
Elwyn et al., 2010		Reviewed literature (reviews, clinical guidelines, research recommendations) and consulted stakeholders (patient survey) to identify treatment uncertainties Reviewed literature to refine list of uncertainties	JLA PSP with experts and stakeholders prioritized (ranked) treatment uncertainties (nominal group technique at an in-person workshop)
Etchegary et al., 2017			Consulted experts to identify research priorities (eight hybrid information-consultation town halls with in-person survey)
Fawole et al., 2014		Consulted experts and stakeholders on training needs (emailed structured questionnaire) and ideas for addressing needs (concept notes) Experts and stakeholders developed inventory of relevant research topics and wrote research proposals (three-day workshop)	
Fischer et al., 2014	Literature reviews Qualitative interviews with stakeholders	Delphi (two rounds) with experts identified research recommendations (three-day workshop) Expert consensus on research agenda obtained (one-day conference)	

Author, Year	Gaps Method	Needs Method	Prioritization Method
Foster et al., 2018			Qualitative interviews with stakeholders (forums at two national conferences and open-response surveys)
			Literature review of research priority-setting methods and priorities of other organizations
			Expert consensus (conference calls and electronic correspondence)
			Consulted stakeholders (at national conference and follow-up electronic survey)
			Final expert consensus (between national association Board of Directors and task force)
Fox et al., 2017		List of key priority areas identified through review of existing priority-setting exercises and consultation with stakeholder network of academics, researchers, clinicians, and patients	JLA PSP with experts
			Expert/stakeholder consensus (interdisciplinary workshop)
Franck et al., 2018		Research Prioritization by Affected Communities protocol used with stakeholders (first facilitated focus group)	Research Prioritization by Affected Communities protocol used with stakeholders (second facilitated focus group with two rounds of prioritization using sticky dots placed on wall with list of questions)
Garnick et al., 2012		Consulted experts and stakeholders (in-person meeting)	
Giangregorio et al., 2014			Consulted experts and stakeholders (online survey)
			Patient advocates selected outcomes of importance (focus group)
			Expert and stakeholder consensus obtained on research priorities falling under PICO (nominal group technique at a half-day in-person meeting)
Gierische et al., 2014	Literature review identified evidence gaps structured by PICOTS		Consulted experts and stakeholders to prioritize research gaps (teleconference calls, web-based surveys, email, ranking survey)
			Reviewed literature (reviews and primary studies) and in-progress research (NLM, undated) to identify relevant studies for identified priority gaps
Gold et al., 2013			Qualitative interviews (focus groups at a half-day meeting) with experts and stakeholders used to prioritize research topics identified in prior systematic review

Author, Year	Gaps Method	Needs Method	Prioritization Method
Goossens et al., 2013	Research topics identified via literature review and executive board of International Society for Adult Congenital Heart Disease Nursing Network		Delphi surveys (two rounds of electronic questionnaires)
Gordon et al., 2016	Experts (interdisciplinary panel) selected research questions and inclusion criteria Literature review (reviews and primary studies)		
Govindarajan et al., 2010		Consulted experts and stakeholders (email communication)	Experts (authors) developed recommendations for future research priorities (online discussions) Consulted stakeholders to select recommendations for final research agenda (in-person conference)
Haghdoost et al., 2012		Consulted experts and stakeholders identified topics for prioritization (brainstorming session)	Delphi with experts prioritized topics (emailed ranking survey)
Hansoti et al., 2017	Reviewed literature (articles in the Global Emergency Medicine Literature Review [GEMLR] database) and summarized data Expert consensus obtained on priorities from summary data (think-tank meeting and national conference)		
Hassan et al., 2009			Quantitative methods (value-of-information analysis) compared different strategies to inform prioritization of future research
Hazo et al., 2019	Literature review (research and opinion papers)	Expert consensus obtained on gaps and needs from literature review findings (two in-person workshops)	
Henderson, Reid, and Jain, 2018		Members of the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS) asked by email to list research priorities	Rank order of topic determined by authors and ratified by Delphi team of BAPRAS Research Committee and chairs of the BAPRAS specialist interest groups Conflicts settled by vote and top ten ranked responses emailed to all BAPRAS members with an online survey asking to rank each topic by importance on a Likert scale of 1–100
Henrotin et al., 2013		Conference chairman selected research questions of interest Consulted experts (reviewed literature; discussed future research needs at a conference)	

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Hoekstra et al., 2017	Literature review		Modified Delphi (Round 1) with stakeholders (online questionnaire); PICO used to synthesize and redefine research topics
			Modified Delphi (Round 2) rated (Likert scale) topics using assessment criteria (online questionnaire)
Hollis, Davis, and Reeb, 1995	Delphi (Round 1) nurses list research needs		Delphi (two rounds) nurses selected top three research questions (series of questionnaires)
Hubbard et al., 2017		Literature review	Stakeholders (patients) ranked priority research topics (online pilot cross-sectional survey)
		Expert and stakeholder consensus (meeting)	
Hunt and Brooks, 1982	Delphi: experts (journal editors) identified up to five research needs		Delphi with experts (journal editors), two rounds of ratings (Likert scale) to prioritize research needs
Jaramillo et al., 2013			Adapted Global Evidence Mapping, identified priority research questions through evidence mapping of reviews, face-to-face workshop with stakeholders and experts who identified broad priority topics and research questions in PICO format, experts refined list, online survey with stakeholders (patients) ranked research questions
Jones et al., 2017		Questionnaire with stakeholders identified treatment questions (online and paper-based survey)	Ranking of identified research questions informed final list for prioritization
		Reviewed literature (systematic reviews, clinical guidelines, primary studies) to refine research questions	JLA PSP and nominal group technique with experts and stakeholders used to achieve consensus on research priorities (face-to-face workshop involving ranking and group discussions)
Kerr et al., 2011	Systematic review		
Kessler and Leone, 2012		Literature review on relevant evaluation tools	
		Consulted stakeholders on review findings (breakout session at a conference)	
Khandelwal et al., 2010			CAM with stakeholders (regional and global in-person meetings)
Kleinman et al., 2018	Experts selected research questions using PICO		Ranking identified priority research gaps (surveys)
	Systematic review		
	Reviewed in-progress research (e.g., ongoing trials)		

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Kolahi et al., 2008			Experts selected method, criteria, and scoring system for prioritization (in-person workshop)
			Consulted experts for priority topics (brainstorming sessions, focus groups, Delphi, expert opinion)
			COHRED model criteria used to select priority topics (scoring process)
Lalloo et al., 2018	Modified Delphi: Reviewed literature and consulted experts to identify research topics for prioritization		Modified Delphi (two rounds) used to achieve consensus on research priorities among experts (health professionals) (online rating and ranking questionnaires)
Li and Bombardier, 2006			Consulted experts (preconference online discussion groups and online survey; national conference)
Li et al., 2010			Experts (authors) restated clinical recommendations as research questions
			Delphi (two rounds) with experts ranked priority research questions (emailed online survey)
Luckner et al., 2005			Questionnaire with experts (online survey with ranking items)
Maassen et al., 2018		Qualitative interviews (focus groups) with stakeholders (patients) identified research and health care needs	
Maggiore et al., 2017	Literature review		
Maglione et al., 2012	Systematic review	Consulted experts on findings from systematic review to develop guideline statements (two-day workshop)	Expert/stakeholder consensus obtained on guideline statements and research priorities (voting poll at workshop, follow-up emails and conference calls)
Malcolm et al., 2008 Malcolm et al., 2009		Delphi process: Round 1, qualitative interviews with families ($n = 5$), linked professionals ($n = 18$), and focus groups with hospice staff and volunteers ($n = 44$) led to the generation of 56 research topics categorized within 14 broad themes	Delphi process To give a larger number of stakeholders ($n = 621$) (including families $n = 293$; hospice staff/volunteers $n = 216$ and professionals $n = 112$) the opportunity to rate the importance of each research topic and seek group consensus on the future research priorities for children's hospice care in subsequent rounds. To give a larger number of stakeholders the opportunity to provide their ratings, postal questionnaires were sent out in Rounds 2 and 3
Marten et al., 2019	Delphi (Round 1) gaps extracted from prior systematic review		Delphi (Round 2) in-person meeting with adapted questionnaire

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Marvin et al., 1991			Delphi (four rounds) with experts (series of questionnaires)
Masalu et al., 2012		Consulted stakeholders (questionnaire and follow-up one-day workshop)	Consulted stakeholders to create final research agenda (combined literature review materials, questionnaire responses, and workshop notes)
McGregor et al., 2017	Scoping review		Experts (advisory group) selected prioritization criteria Stakeholders (health professionals) ranked (Likert scale) gaps using prioritization criteria (modified nominal group technique during in-person meetings) Qualitative (e.g., focus group) and quantitative data collected during meetings Stakeholder consensus (Dotmocracy system)
McPherson et al., 2016	Consulted researchers and stakeholders (first facilitated workshop structured by modified nominal group technique)	Consulted researchers and stakeholders to identify obstacles and opportunities to research identified gaps (second facilitated workshop)	Researcher and stakeholder consensus (second facilitated workshop)
Medlow and Patterson, 2015	Systematic review and expert opinion identified priority topics		Consultation with experts and stakeholders identify priority subtopics (value weighing online survey)
Meremikwu et al., 2011		Reviewed source material (national database) to create list of commonly reported health problems	Consulted key informants to review and rank priority research areas (mailed or emailed survey) Reviewed source material (prior systematic reviews and clinical trials) to identify evidence gaps for top priority areas Consulted stakeholders (health professionals) to nominate systematic review topics based on priority list and review of evidence (three in-person meetings and gap analysis) Experts and stakeholders ranked nominated systematic reviews
Mickenautsch, 2012	Literature review Characterized research gaps using PICOS		
Miller et al., 2017		Literature scan identified effective strategies Qualitative (in-depth, semistructured) interviews with experts and stakeholders obtained insight to complement literature review Expert and stakeholder consensus informed development of an evidence-driven framework (one-day workshop)	

Author, Year	Gaps Method	Needs Method	Prioritization Method
Mitchell et al., 2013	Literature review identified research gaps for consensus statement using PICO format (guidelines, reviews, primary studies)	Qualitative survey with experts refined evidence gaps Modified Delphi with experts used to achieve consensus (two quantitative [Likert scale] surveys and conference call)	
Murphy et al., 2018	Experts (authors) selected research question using PICOT-SD [study design] (teleconference meetings) Scoping review (reviews, primary studies, reports)		
Murto et al., 2018		Delphi (two rounds) with experts identified top three issues of concern (electronic survey)	
Nierse et al., 2013		Experts (authors) selected topics based on specific framework, literature review, team discussions, and pilot patient interviews Consulted stakeholders (patients) to identify research topics of importance (three focus groups and expert meetings)	Quantitative survey identified stakeholder research priorities Expert/stakeholder consensus on research agenda (dialogue meeting)
Palermo et al., 2019		Students, educators, researchers, clinicians, and clients listed top three research priorities (qualitative anonymous online survey)	Ranked (Likert scales) research priorities (quantitative anonymous online surveys)
Patel et al., 2013		Consulted stakeholders to identify research needs from a previously published review and suggestions for new topics (email, discussion board, or conference call)	Stakeholder consensus (group discussions)
Patel et al., 2016	Consulted stakeholders to identify research questions Systematic review (scientific databases; NLM, undated; device manufacturers) Translated gaps to research questions using PICOTS format		
Pearlman, 1965		Consulted experts (conference forum)	
Pellicano, Dinsmore, and Charman, 2014			Qualitative (face-to-face focus groups and interviews via in-person, telephone, or Skype) and quantitative interviews (online survey) with experts and stakeholders
Pinnock et al., 2010		Experts developed draft research needs statements focused on five topics Consulted experts and stakeholders	
Pinnock et al., 2012			Delphi (three rounds) obtained expert consensus on research priorities addressed in published research needs statement (online forms)

Author, Year	Gaps Method	Needs Method	Prioritization Method
Pinyerd et al., 1993			Delphi (two rounds) with experts (mailed open-ended and quantitative questionnaires)
Poggensee et al., 2014		Consulted experts and stakeholders to identify research needs (semistructured questionnaire and in-person workshop)	
Pratt, 2019		Qualitative interviews (29 semistructured interviews and one focus group) with key informants identified inclusion needs in research priority–setting processes	
Quinn et al., 2017	Delphi: Consulted health professionals (telephone interview)		Delphi (three rounds) obtained consensus among a wider group of stakeholders on research priorities (online surveys)
Rabb et al., 2016	Consulted experts (working groups reviewed the literature) and modified Delphi identified key research questions and knowledge gaps (conference)		
Rahman et al., 2019			Consulted experts and stakeholders to identify research priorities (four nominal group technique sessions with scoring exercises, group discussions, and final vote)
Ranse et al., 2014		Consulted experts and stakeholders on research areas of interest (face-to-face workshop at an international conference)	Delphi (two rounds) with stakeholders (health professionals) prioritized research areas (quantitative surveys)
Rashidian et al., 2013	Bibliographic review		
Raukar et al., 2014		Experts (working group) identified research questions of interest	Expert (attendees of a conference breakout session) achieved consensus on priority research areas (modified nominal group technique and electronic polling)
Ravindran, 2018	Literature review Reviewed in-progress research (health research organization websites) Consulted researchers	Consulted stakeholders (national seminar and via email) Key informant interviews	Expert/stakeholder consensus (at national conference)
Rees et al., 2017		Adapted JLA PSP with experts and stakeholders (open-ended online or paper survey) and reviewed source material (practice guidelines) to identify uncertainties	Experts refined uncertainties list for prioritization exercise (meeting and ranking process) Adapted JLA PSP with experts and stakeholders achieved consensus of research priorities from uncertainties list (nominal group technique at a one-day workshop)
Reid et al., 2007			Mailed questionnaire with midwives (open-ended questions)

Author, Year	Gaps Method	Needs Method	Prioritization Method
Rich et al., 2016	Reviewed source materials (national organization practice guidelines and recommendations)		
Rideout et al., 2013		Consulted experts (steering committee) on needs (planning retreat)	Delphi (two rounds) with stakeholders (community advisory board) identified research priorities (online surveys) Expert and stakeholder consensus achieved on areas for collaboration (snow card approach at an in-person meeting and follow-up online survey)
Rikkers et al., 2015		Consulted stakeholders (telephone survey and community meetings) on research agenda and community participation in research	
Rizzoli et al., 2015	Literature review Expert consultation (in-person meetings)		
Robinson, Saldanha, and Mckoy, 2011b	Reviewed literature (of reviews) and evidence reports (AHRQ's website) Consulted experts about their research gap identification practices to inform development of a framework (email communication)		
Robinson, Saldanha, and Mckoy, 2011c	Reviewed source material (published evidence-based guidelines) and characterized gaps using PICO		
Roman et al., 2018		Expert consensus obtained on research needs (workshops at two in-person meetings)	
Rosala-Hallas et al., 2018			Reviewed in-progress research (NLM, undated and research networks to identify experts; Questionnaire with experts (two rounds of an online survey)
Rudan, Theodoratou, et al., 2012			Experts identified relevant interventions for prioritization exercise (literature review and discussions) CHNRI with international expert panel (reviewed evidence on selected interventions, five-day in-person meeting, questionnaire to score interventions based on prioritization criteria)
Rushton et al., 2014	Modified Delphi Round 1 experts identified up to ten research priority areas		Modified Delphi (Rounds 2 and 3) ranked research thesis priority topics (series of emailed questionnaires)

Author, Year	Gaps Method	Needs Method	Prioritization Method
Rushton and Moore, 2010		Clinicians and tutors submitted list of research gaps; content analysis identified research themes	Importance of each theme ranked on a 1–5 scale Another round ranking by importance and feasibility Descriptive analysis and Kendall's coefficient of concordance used to determine consensus
Saldanha et al., 2013	Reviewed source material (prior systematic review) and used PICOS to characterize gaps Consulted authors of systematic reviews to provide feedback on gaps (email communication) Translated gaps into research questions using PICOS	Consulted local stakeholders (online survey followed by in-person 1.5-hour meeting) and external stakeholders (online survey) to refine research questions	Delphi (three rounds) with external stakeholders established consensus on research questions (online ranking surveys)
Saunders and Crossing, 2012		Experts selected research topic areas Consulted stakeholders on research needs (small group discussions at a World Café workshop)	Questionnaires (mailed surveys) with broader stakeholder network identified and ranked research priorities (from the World Café workshop)
Sawford et al., 2014		Modified Delphi (Round 1) experts and stakeholders identified priority research areas.	Modified Delphi (Round 2) ranked research priorities (online questionnaires)
Schipper and Abma, 2011		Semistructured interviews with patients on topics based on a literature review Multidisciplinary team of researchers, caregivers, and patients identified and developed preliminary overview of research themes	Several focus groups further explored and prioritized research themes Participants ranked the research themes from most important theme to least important Individual preferences were discussed in the group which finally led to the validation of the research themes and a priority list
Schoemans et al., 2019		Consulted experts and stakeholders (in-person, teleconference, and webinar meetings) and reviewed literature to identify research needs	
Scott et al., 2018	Consulted researchers to identify research questions (in-person workshop)		Researchers identified prioritization criteria (during workshop) and used criteria to reach consensus on key themes within identified research questions
Sethuraman et al., 2014			Expert consensus obtained on research recommendations and priority questions (nominal group technique, face-to-face meetings, monthly calls, email discussions, preconference survey) Experts rated research agenda (voting method)
Shapovalova et al., 2011		Consulted experts to identify public health needs for research agenda topics (group discussions at a consultation meeting)	

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Siegfried, Beanland, et al., 2015	Systematic review		
Sigall-Boneh et al., 2017	Stakeholders selected three thematic areas Narrative topical review		
Sinaii, 2010		Consulted experts (online and paper survey)	
Sleep, Bullock, Grayson, et al., 1995			Delphi (four rounds) with experts (semistructured questionnaires)
Smith, Mitton et al., 2009			Experts and stakeholders selected research topics for prioritization exercise (based on past experiences and review of literature) Consulted stakeholders to identify priority research areas (three forums)
Smith, Ross, et al., 2005			Qualitative interviews (focus groups) with service users
Tavana et al., 2015			Consulted experts and stakeholders to prioritize research topics in four areas (scoring form)
Tudur-Smith et al., 2014	Delphi (Round 1): clinical trial unit directors identify research topics		Delphi (two rounds) clinical trial unit directors ranked (using scale similar to Grading of Recommendations, Assessment, Development and Evaluations scale), and reached consensus on research priorities (emailed online surveys)
Tandon, Kuehne, and Olden, 2018	Systematic review		
Temel, 2004			Applied novel methods based on graph-theoretical concepts and systems theory principles to identify priorities
Terry, Purdy, and Sanford, 2018			Reviewed source materials (documents stored in an institutional repository) Consulted experts (interviews)
Thompson et al., 2008		Gap analysis by experts (grantees and researchers) identified needs in seven areas (literature searches, one-day in-person meeting)	
Timotijevic et al., 2019			Consulted stakeholders to identify criteria for research priority–setting processes (series of modified European Awareness Raising Scenario Workshops [EASW])
Tol et al., 2012			Qualitative interviews (semistructured focus groups) with experts and stakeholders
Tomlinson, Jordans, et al., 2017		Consulted TWG (email and one face-to-face meeting)	Experts (study authors) selected prioritization criteria; CHNRI method

Author, Year	Gaps Method	Needs Method	Prioritization Method
Tomlinson, Rudan, et al., 2009	CHNRI method with experts (technical working group [TWG]) who generated a list of research questions		CHNRI method with experts (TWG) Consulted stakeholders on prioritization criteria (online questionnaire) and scored questions based on stakeholder-defined weights
Tootoonchi et al., 2012		Delphi (Round 1) stakeholders identified research priorities (one-day brainstorming workshop)	Delphi two rounds of stakeholder ratings of the importance of topics (quantitative questionnaires)
Tordrup et al., 2017	Experts selected topics based on previous evidence (GBD study); Narrative review of evidence (economic evaluations, primary studies, reviews) identified gaps	Consulted public and experts to review findings from narrative review and discuss gaps (2.5-day in-person meeting)	
Tritz et al., 2018	Reviewed source materials (clinical practice guidelines and recommendations); Developed research questions from recommendations using PICO format; Reviewed in-progress research (NLM, undated)		
Truitt et al., 2018			Experts selected topics for prioritization exercise (based on prior evidence) Quantitative surveys (ranking) by stakeholders identified priorities (mailed, telephone, or web-based MTurk survey)
Tunnicliffe et al., 2017			Face-to-face semistructured interviews and focus groups Priority allocation exercises including distributing tokens (i.e., votes) to important research questions
Turner, Ollerhead, and Cook, 2017	Delphi (Round 1) experts (public health professionals) identified up to three research questions (online surveys)		Delphi (two rounds) identified need areas from top research questions in Round 1; Round 2 top research questions further refined
Valerio et al., 2016		Qualitative interviews with stakeholders (expert-facilitated group meeting structured by nominal group technique)	Quantitative scales (Likert-type)
Van Dongen et al., 2016	Literature mapping organized evidence (reviews and primary studies) by treatment modalities Narrative review summarized available evidence and made available for public comment Consulted experts to identify gaps (two-day expert panel meeting)		

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Van Furth, van der Meer, and Cowan, 2016		Consulted experts and stakeholders to identify important research questions (webportal) Reviewed literature (prior reviews or clinical guidelines) to refine list of unanswered research questions	JLA PSP with experts and stakeholders prioritized research questions (survey and workshop)
Van Merode et al., 2016		Qualitative interviews (individual in-depth interviews and focus groups) with stakeholders (patients) identified research needs	Quantitative survey (online or mailed) with stakeholders prioritized research needs Experts and stakeholders selected final priority topics (three-hour dialogue meeting)
Ventura and Waligora-Serafin, 1981			Delphi (three rounds) with nurses (series of questionnaires)
Villa et al., 2017	Systematic review		Modified Delphi (four rounds) with experts gathered consensus on research issues (mailed questionnaires and face-to-face meeting at an international conference) Consulted working group to resolve uncertainties from face-to-face meeting
Virendrakumar et al., 2016	Literature review		
Wan et al., 2016			JLA PSP with experts and stakeholders identified research priorities (online or paper surveys, review of literature to refine research questions, consensus meeting)
Waters et al., 2012		Consulted experts (two-day international meeting)	
Weenen et al., 2014			Qualitative and quantitative online survey identified expert stakeholder priority research areas
Welfare et al., 2006		Qualitative interviews (focus groups and one-to-one interviews) with patients	
Welsh et al., 2015			Reviewed source material (prior JLA PSP) to select uncertainties and top research questions for prioritization exercise Decision tool used to prioritize review updates Consulted experts (editorial board) to prioritize reviews from list Reviewed in-progress research (trial register) and consulted experts to identify new reviews
White et al., 2001	Literature review	Consulted experts to identify current research activities and research needs (survey)	Consulted experts on findings from review and survey to identify priorities for future research

Author, Year	Gaps Method	Needs Method	Prioritization Method
Willett et al., 2010		Delphi (Round 1) with experts (health professionals) identified research needs (mailed or emailed questionnaire) Experts (research group) developed research questions based on questionnaire responses	Delphi (Round 2) with experts (health professionals) ranked identified research questions (from Round 1) (questionnaire)
Williams et al., 2012	Consulted experts and stakeholders to identify knowledge gaps (roundtable meeting)		Expert and stakeholder consensus obtained on priority areas for a policy agenda (roundtable meeting)
Williamson et al., 1984			Structured group judgment model with experts and stakeholders (surveys, literature searches, review of local data)
Woodward et al., 2016	Scoping review	Consulted experts and stakeholders (online survey and group session at a global symposium) Qualitative and quantitative data collection Delphi with experts refined research needs (email consultation) Expert consensus on research needs (one-hour webinar with group discussions, LinkedIn group forum) Consulted experts and stakeholders to develop final research agenda (workshop involving face-to-face meetings and online groups)	
Wu, Viswanathan, and Ivy, 2012	Literature review and researcher experience used to inform development of conceptual framework outlining research gaps		Delphi (four rounds) with experts identified priority areas for the framework (series of questionnaires and discussions at an in-person conference)
Yassi et al., 2005	Literature review		Qualitative interviews (focus groups) with health care workers)
Yeh et al., 2013			Modified Delphi with experts and stakeholders rated priority research topics identified in published review (nominal group technique)
Yin et al., 2000			Consulted nurses (group idea-writing at a conference)
Yu et al., 2015	Experts selected clinical questions based on existing practice recommendations Reviewed source materials (prior systematic reviews) and mapped evidence to questions to identify gaps	Quantitative online survey (Likert scale) assessed stakeholder perceived importance of identified questions (regional conference)	

Appendix D. Full Data-Abstraction Evidence Table

The descriptions in Table D.1 were adapted from information in the indicated source documents.

Table D.1. Evidence Table Exercises Supported or Conducted by Research Funding Organizations

Study Details	Gaps	Needs	Prioritization	Impact
Gaps Only				
Duintjer Tebbens et al., 2013				
Date(s): not available or applicable (N/A) *Aim:* identification of research gaps *Health condition:* physical health—polio *Topic or focus area:* prevention *Funding organization(s):* government—the Centers for Disease Control and Prevention (CDC) *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** *Literature review* *Quantitative methods:* expert estimates on transmission rates *Workshop, meeting, conference:* two-day expert meeting **Gap criteria** *Criteria:* alignment with organization's mission *Final determination method:* expert determination—expert elicitation and discussion **Stakeholders** *Involve nonresearchers:* unclear—"experts" *Composition:* other—"experts" *Identification method:* purposive—authorship on multiple peer-reviewed, published studies *Level of engagement:* collaboration **Inputs** *Technology, tools:* teleconference meetings *Other inputs:* literature review; expert elicitation via assessments and discussions	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Data limitations. Complex nature of elicitation process. Different interpretations of the existing limited data. Practical issues or inherent inabilities to conduct studies.

Study Details	Gaps	Needs	Prioritization	Impact
Han et al., 2018				
Date(s): September 2017	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research gaps	*Workshop, meeting, conference:* topics chosen by workshop chairs and discussed by participants	N/A	N/A	*Method:* N/A
Health condition: physical health—lung disease in women	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: basic science	*Criteria:* N/A; only states that topics were chosen	*Criteria:* N/A	*Criteria:* N/A	**Replication**
Funding organization(s): government—National Heart, Lung, and Blood Institute; NIH	*Final determination method:* other—discussions	*Final determination method:* N/A	*Final determination method:* N/A	N/A
Setting: U.S.	**Stakeholders**	**Stakeholders**	**Stakeholders**	**Challenges**
Timeline: N/A	*Involve nonresearchers:* no—workshop of investigators	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A	N/A
Cost: N/A	*Composition:* researchers	*Composition:* N/A	*Composition:* N/A	
	Identification method: purposive—investigators	*Identification method:* N/A	*Identification method:* N/A	
	Level of engagement: collaboration	*Level of engagement:* N/A	*Level of engagement:* N/A	
	Inputs	**Inputs**	**Inputs**	
	Technology or tools: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Other inputs: workshop with discussions, electronic discussions	*Other inputs:* N/A	*Other inputs:* N/A	
Kelly et al., 2018				
Date(s): September 2017	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research gaps	*Workshop, meeting, conference:* synthesis of workshop presentations	N/A	N/A	*Method:* N/A
Health condition: physical health—obesity in adolescents	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: basic science; treatment, symptom management, diagnosis, assessment, epidemiology; etiology and risk factors	*Criteria:* N/A	*Criteria:* N/A	*Criteria:* N/A	**Replication**
	Final determination method: other—Speakers, discussants, and participants synthesized information presented at workshop and, drawing from their knowledge of the literature, made recommendations on gaps.	*Final determination method:* N/A	*Final determination method:* N/A	N/A
Funding organization(s): N/A	**Stakeholders**	**Stakeholders**	**Stakeholders**	**Challenges**
Setting: U.S.	*Involve nonresearchers:* no—"scientists"	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A	N/A
Timeline: less than 6 months	*Composition:* researchers—scientists	*Composition:* N/A	*Composition:* N/A	
Cost: N/A	*Identification method:* N/A	*Identification method:* N/A	*Identification method:* N/A	
	Level of engagement: collaboration	*Level of engagement:* N/A	*Level of engagement:* N/A	
	Inputs	**Inputs**	**Inputs**	
	Technology or tools: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Other inputs: workshop, synthesis	*Other inputs:* N/A	*Other inputs:* N/A	

Study Details	Gaps	Needs	Prioritization	Impact
Kutlesic et al., 2017				
Date(s): February 11–12, 2015	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research gaps	*Workshop, meeting, conference:* meeting of experts (multidisciplinary panel presentations, working groups, policy roundtable discussions)	N/A	N/A	*Method:* N/A
Health condition: physical health—pediatric neurodevelopment, nutrition, inflammation		**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Gap criteria	*Criteria:* N/A	*Criteria:* N/A	**Replication**
Topic or focus area: basic science, treatment	*Criteria:* N/A—Five working groups convened to brainstorm existing research evidence and knowledge gaps.	*Final determination method:* N/A	*Final determination method:* N/A	N/A
Funding organization(s): government—National Institute of Child Health and Human Development		**Stakeholders**	**Stakeholders**	**Challenges**
	Final determination method: N/A	*Involve nonresearchers:* N/A	Involve nonresearchers: N/A	N/A
	Stakeholders	*Composition:* N/A	*Composition:* N/A	
Setting: U.S.	*Involve nonresearchers:* no—experts but not defined as patients or providers	*Identification method:* N/A	*Identification method:* N/A	
Timeline: less than 6 months		*Level of engagement:* N/A	*Level of engagement:* N/A	
Cost: N/A	*Composition:* researchers	**Inputs**	**Inputs**	
	Identification method: purposive	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Level of engagement: coproduction	*Other inputs:* N/A	*Other inputs:* N/A	
	Inputs			
	Technology or tools: N/A			
	Other inputs: two-day workshops with multidisciplinary panels, working groups, and roundtables			
Lahm et al., 2018				
Date(s): 2015–2016	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research gaps	*Workshop, meeting, conference*	N/A	N/A	*Method:* N/A
Health condition: physical health—right ventricular function	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Criteria: importance to stakeholders	*Criteria:* N/A	*Criteria:* N/A	**Replication**
Topic or focus area: diagnosis, assessment, epidemiology	*Final determination method:* consensus	*Final determination method:* N/A	*Final determination method:* N/A	N/A
		Stakeholders	**Stakeholders**	**Challenges**
Funding organization(s): other—lists authors' individual funding but not funding for this study	**Stakeholders**	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A	N/A
	Involve nonresearchers: no	*Composition:* N/A	*Composition:* N/A	
	Composition: other—experts of the American Thoracic Society	*Identification method:* N/A	*Identification method:* N/A	
Setting: U.S.	*Identification method:* unclear—just states the group "'was convened"	*Level of engagement:* N/A	*Level of engagement:* N/A	
Timeline: N/A		**Inputs**	**Inputs**	
Cost: N/A	*Level of engagement:* collaboration	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Inputs	*Other inputs:* N/A	*Other inputs:* N/A	
	Technology or tools: teleconference			
	Other inputs: workshops			

Study Details	Gaps	Needs	Prioritization	Impact
Larsson et al., 2018				
Date(s): August–September 2017 *Aim:* identification of research gaps *Health condition:* physical health: antibiotic resistance *Topic or focus area:* basic science, prevention *Funding organization(s):* government—Swedish Research Council; European Union's Horizon 2020 *Setting:* other country—Sweden *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Qualitative methods:* preworkshop questionnaire *Workshop, meeting, conference:* workshop with small groups and discussion **Gap criteria** *Criteria:* importance to stakeholders *Final determination method:* other—"discussion" **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers—scientists from 14 countries with expertise *Identification method:* purposive—invited by Swedish Research Council and the Centre for Antibiotic Resistance *Level of engagement:* collaboration **Inputs** *Technology or tools:* online questionnaire *Other inputs:* workshop with small groups and discussion	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A
Marrazzo et al., 2010				
Date(s): November 2008 *Aim:* identification of research gaps *Health condition:* physical health—bacterial vaginosis *Topic or focus area:* basic science, treatment, diagnosis, assessment, epidemiology *Funding organization(s):* government—National Institutes of Allergy and Infectious Disease *Setting:* U.S. *Timeline:* less than 6 months	**Strategy or method** *Workshop, meeting, conference:* workshop presentations **Gap criteria** *Criteria:* potential value *Final determination method:* expert determination, as determined by experts in workshop presentations **Stakeholders** *Involve nonresearchers:* unclear—experts in the field of research and clinical practice *Composition:* experts in the field of research and clinical practice *Identification method:* N/A *Level of engagement:* coproduction	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Cost: N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* workshop presentations			

Matthews et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): October 2015 *Aim:* identification of research gaps *Health condition:* physical health—sleep problems in cancer *Topic or focus area:* unclear *Funding organization(s):* professional association—American Academy of Sleep Medicine; government—National Institute on Aging; industry—Pfizer, Phillips Respironics *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Workshop, meeting, conference* **Gap criteria** *Criteria:* Unclear *Final determination method:* other—information presented and synthesized **Stakeholders** *Involve nonresearchers:* no—experts and oncology nurse scientists only *Composition:* sleep researchers, oncology nurse scientists *Identification method:* purposive—Participants in the project were selected based on their background, organizational responsibility, and willingness to participate *Level of engagement:* coproduction **Inputs** *Technology or tools:* N/A *Other inputs:* conference	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Reid et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): September, 2010 *Aim:* identification of research gaps *Health condition:* physical health—pain in older adults *Topic or focus area:* treatment *Funding organization(s):* government—NIH, U.S. Department of Health and Human Services *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Workshop, meeting, conference:* conference panel presentations and discussions **Gap criteria** *Criteria:* potential value *Final determination method:* other—participant discussion at workshop **Stakeholders** *Involve nonresearchers:* no—"researchers" *Composition:* researchers *Identification method:* purposive—consensus-driven process by NIH Pain Consortium committee, with members selected for their expertise	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
	in pain management, aging, pharmacoepidemiology, and/or health services research			
	Level of engagement: collaboration			
	Inputs			
	Technology or tools: N/A			
	Other inputs: Eighteen panel members provided presentations, followed by a multidisciplinary panel discussion.			
	Meeting transcripts and panelists' slide presentations were reviewed to identify the gaps and the types of studies and research methods panelists suggested could best address them.			

Repacholi and Greenebaum, 1999

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): June 1997	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research gaps	*Literature review:* The meeting reviewed current scientific literature,	N/A	N/A	*Method:* N/A
Health condition: physical health—biological effects and related health hazards of ambient or environmental static	*Workshop, meeting, conference:* Speakers provided overviews of the scientific literature that were discussed by participants of the meeting. Subsequently, expert working groups identified gaps.	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
		Criteria: N/A	*Criteria:* N/A	**Replication**
Topic or focus area: basic science		*Final determination method:* N/A	*Final determination method:* N/A	N/A
	Gap criteria	**Stakeholders**	**Stakeholders**	**Challenges**
Funding organization(s): government—the German Federal Ministry of Environment, Nature Protection and Nuclear Safety, the Japanese Ministry of Health and Welfare, and the Swiss Federal Office of Public Health; other—WHO, the International Commission on Non-Ionizing Radiation Protection	*Criteria:* potential value	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A	N/A
	Final determination method: consensus	*Composition:* N/A	*Composition:* N/A	
	Stakeholders	*Identification method:* N/A	*Identification method:* N/A	
	Involve nonresearchers: no—only mentions scientists	*Level of engagement:* N/A	*Level of engagement:* N/A	
	Composition: researchers—working groups were composed of scientists	**Inputs**	**Inputs**	
	Identification method: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Level of engagement: collaboration	*Other inputs:* N/A	*Other inputs:* N/A	
Setting: other country—Italy	**Inputs**			
Timeline: N/A	*Technology or tools:* N/A			
Cost: N/A	*Other inputs:* meeting with scientific literature presentations, working groups' consensus report			

85

Study Details	Gaps	Needs	Prioritization	Impact
Shapira, Lloyd-Puryear, and Boyle, 2010				
Date(s): February 2008 *Aim:* identification of research gaps *Health condition:* physical health—congenital hypothyroidism *Topic or focus area:* basic science *Funding organization(s):* government—the U.S. CDC, the Health Resources and Services Administration, and the National Newborn Screening and Genetics Resource Center *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Workshop, meeting, conference:* series of presentations and discussions of group of experts **Gap criteria** *Criteria:* Likely potential value but not well described *Final determination method:* other—workshop discussions; likely consensus but not specifically stated **Stakeholders** *Involve nonresearchers:* Unclear—only states experts but does not define *Composition:* other—experts *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* workshop of experts with participant discussion	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A
Stout et al., 2016				
Date(s): 2014 *Aim:* identification of research gaps *Health condition:* physical health—cancer *Topic or focus area:* treatment, symptom management *Funding organization(s):* government—supported by the Rehabilitation Medicine Department of the Clinical Center at NIH, the National Cancer Institute, and the Eunice Kennedy Shriver National Institute of Child Health and Human Development National Center for Medical Rehabilitation	**Strategy or method** *Literature review:* expert group to review current literature *Workshop, meeting, conference:* SME group reviewed current literature and practice patterns and identified gaps **Gap criteria** *Criteria:* N/A *Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* unclear—"clinical experts" *Composition:* researchers—"clinical experts" Funders: representation from the National Cancer Institute and the National Center for Medical Rehabilitation Research of the Eunice	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Research at NIH *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	Kennedy Shriver National Institute of Child Health and Human Development *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Task force and SME groups did literature reviews, peer queries, discussion, and synthesis.			

Needs Only

Buchanan et al., 2013

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): September 2011 *Aim:* identification of research needs *Health condition:* physical health—breast cancer in young women *Topic or focus area:* prevention, symptom management, diagnosis, assessment, epidemiology *Funding organization(s):* government—the U.S. CDC *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference:* three-day meeting—Participants categorized risk, prevention, and protective factors according to strong, promising, limited, or insufficient scientific evidence. **Need criteria** *Criteria:* burden of the disease *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* yes—experts represented government organizations, nongovernmental organizations (NGOs), academic institutions, and recognized community breast cancer advocacy organizations *Composition:* patients and the public, researchers *Identification method:* purposive *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature review; three-day meeting	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Hsieh et al., 2017; National Institute of Diabetes and Digestive and Kidney Diseases, 2015				
Date(s): February 2015	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research needs	N/A	*Workshop, meeting, conference*	N/A	*Method:* N/A
Health condition: physical health—congenital genitourinary conditions	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Criteria: N/A	*Criteria:* importance to stakeholders	*Criteria:* N/A	**Replication**
	Final determination method: N/A	*Final determination method:* unclear—All suggestions will be considered by the National Institute of Diabetes and Digestive and Kidney Diseases.	*Final determination method:* N/A	N/A
Topic or focus area: treatment	**Stakeholders**		**Stakeholders**	**Challenges**
Funding organization(s): government—NIH	*Involve nonresearchers:* N/A	**Stakeholders**	*Involve nonresearchers:* N/A	N/A
Setting: U.S.	*Composition:* N/A	*Involve nonresearchers:* yes	*Composition:* N/A	
Timeline: less than 6 months	*Identification method:* N/A	*Composition:* patients and the public; researchers—experts from a variety of health fields, including urology, adolescent and developmental pediatrics, nephrology, gynecology, epidemiology, nursing, and public health	*Identification method:* N/A	
Cost: N/A	*Level of engagement:* N/A		*Level of engagement:* N/A	
	Inputs	*Identification method:* stakeholder organizations—Spina Bifida Association	**Inputs**	
	Technology or tools: N/A		*Technology or tools:* N/A	
	Other inputs: N/A	*Level of engagement:* collaboration	*Other inputs:* N/A	
		Inputs		
		Technology or tools: N/A		
		Other inputs: Meeting convened by NIH; expert presentations; breakout sessions to identify research areas of highest and intermediate need; facilitated discussion with entire group to summarize major research needs.		
Kolanowski et al., 2018				
Date(s): October, 2017	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research needs	N/A	*Literature review:* Experts did literature reviews from which recommendations were presented.	N/A	*Method:* N/A
Health condition: psychological health—dementia	**Gap criteria**		**Prioritization criteria**	*Outcome:* N/A
	Criteria: N/A	*Workshop, meeting, conference*	*Criteria:* N/A	**Replication**
	Final determination method: N/A	**Need criteria**	*Final determination method:* N/A	N/A
Topic or focus area: treatment	**Stakeholders**	*Criteria:* importance to stakeholders	**Stakeholders**	**Challenges**
Funding organization(s): government—NIH	*Involve nonresearchers:* N/A	*Final determination method:* consensus—Presenters met in a closed session and were charged by the advisory board to achieve consensus.	*Involve nonresearchers:* N/A	N/A
	Composition: N/A		*Composition:* N/A	
Setting: U.S.	*Identification method:* N/A		*Identification method:* N/A	
	Level of engagement: collaboration		*Level of engagement:* N/A	

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: less than 6 months *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, researchers *Identification method:* unclear *Level of engagement:* collaboration—Presenters achieved consensus on research recommendations taking into consideration audience feedback. **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	

Lewis et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* identification of research needs *Health condition:* physical health—cesarean section *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* web-based surveys *Quantitative methods:* web-based surveys *Workshop, meeting, conference:* teleconference **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranked **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* unclear: stakeholders with relevant interests and expertise *Level of engagement:* collaboration **Inputs** *Technology or tools:* teleconference, web-based surveys *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Half of the stakeholders declined to participate. A single stakeholder could influence rankings by concentrating all points on a single item or a few items. Some items on the list are too similar to be ranked separately. There were concerns about whether research questions about factors that influence cesarean use are hypothesis driven. Some of the methodologic improvements listed on the survey are basic clinical trial standards that should be acknowledged and followed by researchers.

Study Details	Gaps	Needs	Prioritization	Impact
Lowry et al., 2012				
Date(s): December 2010–March 2011 *Aim:* identification of research needs *Health condition:* physical health—cancer *Topic or focus area:* treatment *Funding organization(s):* government—NIH *Setting:* U.S. *Timeline:* more than 12 months to 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* interviews **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—conducted qualitative analyses to identify themes across interviews **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* Telephone interviews *Other inputs:* N/A	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The sample was small. Findings may not be generalizable to clinicians practicing in fee-for-service settings.
MacDermid et al., 2002				
Date(s): N/A *Aim:* identification of research needs *Health condition:* physical health—hand therapy *Topic or focus area:* treatment *Funding organization(s):* professional association—American Physical Therapy Association *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* survey open-ended response **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder organizations: Hand Therapy Certification Commission *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* open-ended item asking top three most pressing concerns and most critical clinical research questions affecting hand therapy practices	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Pusateri et al., 2013				
Date(s): October 2010–October 2011 *Aim:* identification of research needs *Health condition:* physical health—TXA [tranexamic acid] for traumatic hemorrhage *Topic or focus area:* treatment *Funding organization(s):* government—DoD *Setting:* other country—U.S. and British medical officers *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference:* Recommendations were developed through a series of meetings, teleconferences, and electronic communications. *Other:* The committee (composed of the authors) conducted a review and assessment of knowledge gaps and research requirements. **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* yes—medical officers *Composition:* clinicians, researchers: committee members (authors), invited SMEs *Identification method:* purposive—U.S. and British medical officers who were involved in the development of practice guidelines and who had experience with tranexamic acid (TXA) in trauma, and experts involved with prior study *Level of engagement:* collaboration **Inputs** *Technology or tools:* teleconference, electronic communications *Other inputs:* meetings	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A
Rabinovich et al., 2017				
Date(s): N/A *Aim:* identification of research needs *Health condition:* physical health—malaria *Topic or focus area:* prevention *Funding organization(s):* foundations, charitable organizations—BMGF	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A	**Strategy or method** *Literature review:* systematic literature search for each theme to identify papers published between 2010 and 2016 *Review in-progress research* *Other:* expert panels **Need criteria** *Criteria:* potential value—aspects of malaria that could help in eradication	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Setting: other country—unclear *Timeline:* N/A *Cost:* N/A	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* other—Appears to be consensus; a final meeting of all panel leaders reviewed results of this process and identified cross-cutting themes that arose across several panels. **Stakeholders** *Involve nonresearchers:* yes—program managers, decisionmakers *Composition:* policymakers—"decision makers"; researchers *Other:* "program managers" *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Expert panels did systematic literature search and had discussions with final meeting to identify themes.	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	

Sanchez et al., 2010

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): October 2007 *Aim:* identification of research needs *Health condition:* physical health—cumulative stressors faced by a community *Topic or focus area:* etiology and risk factors—community-based risk assessment *Funding organization(s):* government—Environmental Protection Agency's (EPA) Office of Research and Development (ORD) *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference:* small breakout sessions—Session chairs compiled and summarized the research needs identified by the breakout groups. **Need criteria** *Criteria:* potential value *Final determination method:* unclear **Stakeholders** *Involve nonresearchers:* yes—Other participants were affiliated with the National Institute of Environmental Health Sciences (NIEHS), academia, other research institutes, local government, or community advocacy groups, EPA employees, contractors, or fellows. *Composition:* patients and the public; policymakers—EPA employees, contractors, or fellows; researchers *Identification method:* unclear	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
		Level of engagement: collaboration		
		Inputs		
		Technology or tools: N/A		
		Other inputs: workshop with breakout discussions, summarization and further discussion		

Walton et al., 2016

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): March 2015	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research needs	N/A	*Workshop, meeting, conference*	N/A	*Method:* N/A
Health condition: physical health—noncatastrophic "musculoskeletal" (MSK) trauma	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Criteria: N/A	*Criteria:* N/A	*Criteria:* N/A	**Replication**
	Final determination method: N/A	*Final determination method:* unclear—focused on potential points of convergence	*Final determination method:* N/A	N/A
Topic or focus area: treatment	**Stakeholders**		**Stakeholders**	**Challenges**
Funding organization(s): government—CIHR	*Involve nonresearchers:* N/A	**Stakeholders**	*Involve nonresearchers:* N/A	N/A
	Composition: N/A	*Involve nonresearchers:* yes	*Composition:* N/A	
Setting: other country—Canada	*Identification method:* N/A	*Composition:* patients and the public, clinicians, researchers	*Identification method:* N/A	
Timeline: less than 6 months	*Level of engagement:* N/A	*Identification method:* purposive—Cooperative Alliance for Interventional Radiology Research (CAIRR) and Cardiovascular and Interventional Radiology Society of Europe (CIRSE) Foundation created list of leading scientists for consensus panel.	*Level of engagement:* N/A	
Cost: N/A	**Inputs**		**Inputs**	
	Technology or tools: N/A	*Level of engagement:* collaboration	*Technology or tools:* N/A	
	Other inputs: N/A	**Inputs**	*Other inputs:* N/A	
		Technology or tools: N/A		
		Other inputs: two-day interactive workshop—TED (technology, entertainment and design)–type talks followed by small group discussion and large group discussion to harvest key topics		
		Thematic analysis of workshop recordings—emergent themes were vetted by core authorship team and then member-checked for accuracy and trustworthiness by all members of the workshop and authorship team.		
		Participant travel and meals, where required, were paid through the funders and sponsors of this event, as		

Study Details	Gaps	Needs	Prioritization	Impact
		were the professional facilitator, room rental, and a team-building event.		

Priorities Only				

Allison and Bedos, 2002

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): December 2001–April 2002 *Aim:* identification of research priorities *Health condition:* physical health—dental care *Topic or focus area:* other—Canadian dentists' research priorities *Funding organization(s):* government—CIHR *Setting:* other country—Canada *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* questionnaire **Prioritization criteria** *Criteria:* other—important topics for future research *Final determination method:* vote, rating, rank—list of priorities by percentage endorsed **Stakeholders** *Involve nonresearchers:* yes—dentists *Composition:* clinicians *Identification method:* stakeholder organizations—all dentists within the *Journal of the Canadian Dental Association* *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* questionnaire and prepaid envelope sent to Canadian dentists with the *Journal of the Canadian Dental Association*	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Low survey response rate.

Bochner et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): early 2012 to June 2012 *Aim:* identification of research priorities *Health condition:* physical health—eosinophil associated diseases *Topic or focus area:* treatment, symptom management, diagnosis, assessment, epidemiology *Funding organization(s):* government	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference:* A task force was set up, and a draft document was circulated for review; the document was amended, and the priorities were set at an NIH-organized workshop. **Prioritization criteria** *Criteria:* potential value *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* no—"clinical and basic scientists" *Composition:* researchers—clinical	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Setting: U.S. *Timeline:* less than 6 months *Cost:* N/A			and basic scientists *Identification method:* unclear—assembled by "NIH Institutes and the Office of Disease Prevention" *Level of engagement:* collaboration **Inputs** *Technology or tools:* draft document *Other inputs:* workshop	

Brown et al., 2016

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): March 2015 *Aim:* identification of research priorities *Health condition:* physical health—emergency care for cancer patients *Topic or focus area:* treatment *Funding organization(s):* government—NIH; other—Office of Emergency Care Research *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference:* "These topics were chosen by consensus between the federal conference organizers and experts in the field." **Prioritization criteria** *Criteria:* potential value *Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, researchers, funders—National Cancer Institute, the National Institute of Nursing Research and the Office of Emergency Care Research *Identification method:* purposive—Twenty-six participants attended and were invited according to their previous work in the field or on the recommendation of others. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Workshop	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Bush et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): August–September 2009 *Aim:* identification of research priorities *Health condition:* physical health—impact of climate	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A	**Strategy or method** *Workshop, meeting, conference:* review the current state of the science relevant to the 2009 Joint Indo–U.S. Workshop on Climate Change and Health; discussions on future research directions	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges**

Study Details	Gaps	Needs	Prioritization	Impact
change on health	**Stakeholders**	**Stakeholders**	**Prioritization criteria**	N/A
Topic or focus area: etiology and risk factors	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A	*Criteria:* potential value, potential risk from inaction	
Funding organization(s): government—the U.S. CDC and the Indian Council for Medical Research; other—University of Michigan Center for Global Health	*Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* other—expert review of workshop **Stakeholders** *Involve nonresearchers:* unclear *Composition:* researchers—scientists; other—government and NGOs	
Setting: other country—India			*Identification method:* N/A *Level of engagement:* collaboration	
Timeline: less than 6 months			**Inputs** *Technology or tools:* N/A	
Cost: N/A			*Other inputs:* workshop, review of workshop	
Chapman et al., 2014				
Date(s): 2011	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research priorities	N/A	N/A	*PICOTS:* Cochrane Collaboration experts presented with a list of problem and population, intervention, comparison, and outcome questions drawn from Cochrane systematic reviews	*Method:* N/A *Outcome:* N/A
Health condition: physical health—maternal mortality	**Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Need criteria** *Criteria:* N/A *Final determination method:* N/A		**Replication** N/A
Topic or focus area: prevention	**Stakeholders**	**Stakeholders**	*Quantitative methods:* two-stage survey—Round 1 refined and prioritized the research questions by eliminating those that were considered low priority according to four criteria; in Round 2, respondents prioritized questions.	**Challenges** N/A
Funding organization(s): government—the U.S. CDC and the Indian Council for Medical Research; other—University of Michigan Center for Global Health	*Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Prioritization criteria** *Criteria:* potential value—"potential to maximize the reduction of maternal mortality and morbidity"; feasibility, other—"magnitude and urgency," "future impact"	
Setting: other country—India			*Final determination method:* other—expert review of workshop	
Timeline: less than 6 months			**Stakeholders** *Involve nonresearchers:* unclear—"Cochrane collaboration experts"	
Cost: N/A			*Composition:* researchers—"Cochrane collaboration experts"	

Study Details	Gaps	Needs	Prioritization	Impact
			Identification method: unclear	
			Level of engagement: collaboration	
			Inputs	
			Technology or tools: N/A	
			Other inputs: workshop, review of workshop	

Colagiuri, Boylan, and Morrice, 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research priorities	N/A	N/A	*Involve nonresearchers:* N/A	*Method:* N/A
Health condition: physical health—noncommunicable diseases	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: prevention	*Criteria:* N/A	*Criteria:* N/A	*Criteria:* potential value—The priorities were of central importance to the global response to noncommunicable disease prevention and climate change; potential risk from inaction—had a degree of urgency or immediacy; addresses inequities—social and health justice issues; feasibility—amenable to modification through legal interventions	**Replication**
Funding organization(s): government—The project was funded by grants from the Worldwide University Network and the University of Sydney's International Program Development Fund and further supported by the Sydney Medical School Foundation.	*Final determination method:* N/A	*Final determination method:* N/A		N/A
	Stakeholders	**Stakeholders**		**Challenges**
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A		There were issues with questionnaire design, the selection of experts, subject and researcher bias, and lack of representation, as well as challenges in managing larger groups.
	Composition: N/A	*Composition:* N/A	*Final determination method:* consensus—international Delphi process	The characteristics of the Delphi respondents changed between Round 1 and Round 2.
	Identification method: N/A	*Identification method:* N/A	**Stakeholders**	There was a lack of representation at the workshop from such disciplines as architecture, urban planning, transport, and economics.
	Level of engagement: N/A	*Level of engagement:* N/A	*Involve nonresearchers:* unclear—Participants were suggested by the workshop delegates, from among authors of relevant journal articles, and from professional contacts of one of the authors from among experts.	Several Round 2 respondents did not rank the research questions.
Setting: other country—Australia	**Inputs**	**Inputs**	*Composition:* clinicians, policymakers, product makers, industry, researchers	Some of the proposed priorities included more than one research question.
Timeline: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	*Identification method:* purposive—all participants of the NIH Research Week and a research priority–setting workshop, as well as emailed to 85 stakeholders who were invited but could not attend	The survey was completed in 2012, and it is possible that respondents' opinions may have changed since then.
Cost: N/A	*Other inputs:* N/A	*Other inputs:* N/A	*Level of engagement:* collaboration	Absence of a common language and purpose for
			Inputs	
			Technology or tools: emailed questionnaire	
			Other inputs: workshop	

Study Details	Gaps	Needs	Prioritization	Impact
				communicating and debating.

Comi et al., 2016

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): April 2015 *Aim:* identification of research priorities *Health condition:* physical health—Sturge-Weber Syndrome *Topic or focus area:* basic science, treatment, diagnosis, assessment, epidemiology *Funding organization(s):* government—NIH; foundations, charitable organizations—Sturge-Weber Foundation *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference:* series of talks, breakout sessions, presentations followed by 90-minute discussion; email discussions postmeeting **Prioritization criteria** *Criteria:* N/A *Final determination method:* unclear—no specific consensus methods reported **Stakeholders** *Involve nonresearchers:* no—only researchers *Composition:* researchers *Identification method:* purposive—workshop of clinical and translational researchers *Level of engagement:* collaboration—just researchers **Inputs** *Technology or tools:* N/A *Other inputs:* workshop with breakout sessions of researchers that discussed priorities and email followup discussions	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

DiGiovanni, Banerjee, and Villareal, 2006

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2005 *Aim:* identification of research priorities *Health condition:* physical health—foot and ankle surgery *Topic or focus area:* treatment *Funding organization(s):* professional association: American Orthopaedic Foot and Ankle Society *Setting:* U.S.	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** *Quantitative methods* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers—American Orthopaedic Foot and Ankle Society *Identification method:* stakeholder organizations	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: less than 6 months *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* online questions to choose ten research topics out of 63 and rank choices in order of importance.	

Doolan-Noble et al., 2019

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2016 *Aim:* identification of research priorities *Health condition:* physical health—stroke, impaired vision and hearing, disability, psychological health—dementia, depression *Topic or focus area:* prevention, service delivery, models of care *Funding organization(s):* government *Setting:* other country—New Zealand *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference* **Prioritization criteria** *Criteria:* importance to stakeholders—"participants prioritized the issues they considered important" *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes—health care and service providers and representatives from community-dwelling older adults, NGOs, and Māori and Pasifika providers *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* roadshows, flipbook	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Few Māori and Pasifika people attended the roadshows. Further input from those who fund these challenges is also required.

Freedman et al., 2010

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): July 2009 *Aim:* identification of research priorities *Health condition:* physical health—stroke, impaired vision and hearing, disability, psychological health—dementia, depression *Topic or focus area:* basic science, service delivery, models of care	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** *Workshop, meeting, conference* **Prioritization criteria** *Criteria:* importance to stakeholders—"participants prioritized the issues they considered important" *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes—health care and service providers and	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Few Māori and Pasifika people attended the roadshows. Further input from those who fund these challenges

Study Details	Gaps	Needs	Prioritization	Impact
Funding organization(s): government *Setting:* other country—New Zealand *Timeline:* N/A *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	representatives from community-dwelling older adults, NGOs, and Māori and Pasifika providers *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* roadshows, flipbook	is also required.

Hermoso et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): June 14–16, 2011 *Aim:* identification of research priorities *Health condition:* physical health—pregnancy *Topic or focus area:* treatment *Funding organization(s):* other—financially supported by the Early Nutrition Academy and the EC-funded EURRECA Network of Excellence *Setting:* other country—Germany *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Workshop, meeting, conference:* presentations and discussions **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* yes—qualified experts and new investigators from academia and industry *Composition:* product makers—industry, researchers *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* presentations and discussions	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Hindin, Christiansen, and Ferguson, 2013

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* identification of research priorities *Health condition:* physical health—adolescent sexual and reproductive health *Topic or focus area:* prevention, treatment *Funding organization(s):*	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A	**Strategy or method** *CHNRI* **Prioritization criteria** *Criteria:* importance to stakeholders—potential value; addresses inequities; other—clarity of questions; answerability; implementation likelihood *Final determination method:* vote, rating, rank—ranking using CHNRI	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Nonresponse by some experts

Study Details	Gaps	Needs	Prioritization	Impact
not explicitly reported *Setting:* other country—international *Timeline:* N/A *Cost:* N/A	*Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	criteria **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians—program experts; planned parenthood; policymakers—WHO, United Nations staff members; researchers *Identification method:* snowballing—stakeholder organizations (program managers during an International Planned Parenthood Federation meeting) *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey—Google Analytics to verify interpretation expert input *Other inputs:* Phase 1, ranking; Phase 2, developing research questions based on qualitative survey; Phase 3, ranking research questions using CHNRI criteria	

Husereau, Boucher, and Noorani, 2010

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): August 2005–Fall 2009 *Aim:* identification of research priorities *Health condition:* physical health—health technology assessment *Topic or focus area:* diagnosis, assessment, epidemiology, health technology assessment *Funding organization(s):* government—All authors have received grants to their institution from the Canadian federal, provincial, and territorial ministries of health. *Setting:* other country—Canada	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Systematic review* *Quantitative methods:* informal surveys of advisory committees and other Canadian health care stakeholders, a review of findings from our horizon scanning program and inquiries made to our rapid review program *Consensus methods* Prioritization criteria: Committee members were asked by email to review the list and provide additional criteria that they believed should be considered when prioritizing health technology assessment (HTA) research. **Prioritization criteria** *Criteria:* costs to the health system, government, and society; burden of the disease—whether information regarding burden of disease is	**Evaluation** *Method:* yes—In line with the EUR-ASSESS Priority Setting Subgroup recommendations, a preliminary evaluation of the impact of the priority-setting framework was conducted. A survey of the advisory committees indicated 67% of respondents believed the relevance of HTA topic proposals increased during the time that this process was implemented. Additionally, 88% of respondents believed that changes to the HTA topic development process resulted in an increase in the level of impact of HTA

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: more than 18 months *Cost:* N/A			important to help make decision; importance to stakeholders—interest by media, patients, policymakers, and health professionals; potential value—potential health impact; feasibility—variation in rates of use of this technology for the given clinical condition; other—potential for assessment to inform decisions, given the rate of change in clinical practice and receptor capacity by policymakers *Final determination method:* vote, rating, rank—six common core criteria were selected by a majority vote **Stakeholders** *Involve nonresearchers:* yes *Composition:* purchasers—health authorities responsible for the provision of health services *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* emailed survey *Other inputs:* ranking of survey, face-to-face committee meeting	reports. *Outcome:* N/A **Replication** Unclear **Challenges** Approaches grounded in multiattribute utility theory are considerably less pragmatic to implement and require considerably more up-front work. The reason for differences in preference between committees is not known. There is a potential for preferences of committee members to change over time with changes in committee membership.
Longworth et al., 2011; Sharma et al., 2018				
Date(s): N/A *Aim:* identification of research priorities *Health condition:* physical health *Topic or focus area:* other—priorities of the National Institute for Health and Care Excellence (NICE) *Funding organization(s):* government—methodology grant from the NIHR; MRC *Setting:* other country—UK *Timeline:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Literature review* *Qualitative methods:* Interviewees were asked to suggest up to five topics for methods research that they considered to be most important to assist the NICE decisionmaking process. *Quantitative methods:* Recipients of the email survey were agreed with NICE and included associate directors and senior technical staff working at NICE, the academic groups that conduct reviews of the evidence for NICE, representatives of key evidence and research collaborations in the UK (such as the Cochrane Collaboration), and representatives of a selection of	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Tight time and resource constraints. Low response rate to email survey from international Health Technology Association agencies and other research organizations.

Study Details	Gaps	Needs	Prioritization	Impact
Cost: N/A			similar organizations outside the UK (such as AHRQ in the United States).	
			The final long list of topics was made available by means of the UK MRC website in the form of a feedback questionnaire. Respondents were asked to rank their top three priorities and to provide information on how each could help improve decisionmaking at NICE.	
			Workshop, meeting, conference: A workshop was convened with the objective of clarifying and refining the list of potential methodology research topics identified by the focused literature review, interviews, and email survey.	
			Researcher-only topic identification	
			Prioritization criteria	
			Criteria: importance to stakeholders; alignment with organization's mission—Topic suggestions were limited to research into methods to support NICE decisionmaking.	
			Final determination method: vote, rating, rank—ranking	
			Stakeholders	
			Involve nonresearchers: yes—key members of NICE and closely allied organizations	
			Composition: other—key members of NICE and closely allied organizations	
			Identification method: purposive—all participants of the NIH Research Week and a research priority–setting workshop, as well as a survey emailed to 85 stakeholders who were invited but could not attend	
			Level of engagement: collaboration—chose topics and ranked priorities	
			Inputs	
			Technology or tools: email survey, web-based feedback exercise	
			Other inputs: interviews, workshop	

Study Details	Gaps	Needs	Prioritization	Impact
Mathur et al., 2014				
Date(s): April 2013	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research priorities	N/A	N/A	*Qualitative methods:* survey sent to stimulate ideas	*Method:* N/A
Health condition: physical health—organ transplant	**Gap criteria**	**Need criteria**	*Workshop, meeting, conference*	*Outcome:* N/A
Topic or focus area: treatment	*Criteria:* N/A	*Criteria:* N/A	**Prioritization criteria**	**Replication**
	Final determination method: N/A	*Final determination method:* N/A	*Criteria:* unclear	N/A
Funding organization(s): government—CIHR	**Stakeholders**	**Stakeholders**	*Final determination method:* unclear	**Challenges**
Setting: other country—Canada	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A	**Stakeholders**	N/A
	Composition: N/A	*Composition:* N/A	*Involve nonresearchers:* no	
Timeline: less than 6 months	*Identification method:* N/A	*Identification method:* N/A	*Composition:* researchers	
	Level of engagement: N/A	*Level of engagement:* N/A	*Identification method:* purposive	
Cost: N/A	**Inputs**	**Inputs**	*Level of engagement:* collaboration	
	Technology or tools: N/A	*Technology or tools:* N/A	**Inputs**	
	Other inputs: N/A	*Other inputs:* N/A	*Technology or tools:* online survey	
			Other inputs: premeeting survey to stimulate ideas; two-day meeting presentations and small group discussions led to development of research agenda	
Mathur et al., 2014				
Date(s): January 2017	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research priorities	N/A	N/A	*Literature review:* annual review	*Method:* N/A
Health condition: physical health	**Gap criteria**	**Need criteria**	*Consensus methods*	*Outcome:* N/A
Topic or focus area: treatment	*Criteria:* N/A	*Criteria:* N/A	*Review source materials:* identified list of diseases from prior priority list	**Replication**
Funding organization(s): government—United Kingdom Department for International Development	*Final determination method:* N/A	*Final determination method:* N/A	**Prioritization criteria**	N/A
	Stakeholders	**Stakeholders**	*Criteria:* burden of the disease—high mortality; potential risk from inaction; other—human transmission of disease	**Challenges**
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A		Expert-driven biases.
	Composition: N/A	*Composition:* N/A	*Final determination method:* consensus	
Setting: other country—UK	*Identification method:* N/A	*Identification method:* N/A	**Stakeholders**	
	Level of engagement: N/A	*Level of engagement:* N/A	*Involve nonresearchers:* no	
Timeline: less than 6 months	**Inputs**	**Inputs**	*Composition:* researchers	
	Technology or tools: N/A	*Technology or tools:* N/A	*Identification method:* N/A	
Cost: N/A	*Other inputs:* N/A	*Other inputs:* N/A	*Level of engagement:* collaboration	
			Inputs	
			Technology or tools: The online survey tool was designed using the slidebar function of Shiny (R Studio,	

Study Details	Gaps	Needs	Prioritization	Impact
			undated). The data collected were processed by an in-house program implemented in R Studio. A custom analytic hierarchy process was used to calculate disease scores for each subcriterion.	
			Other inputs: research and development blueprint components annual review—Convene expert group and prioritization committee; identify long list of diseases.	
			Triage long list of priority diseases into a shorter list using the analytic hierarchy process multicriteria decision analysis method and the Delphi process—the two-step semiquantitative Delphi technique in which each proposed disease was scored from 0 to 1,000.	
			disease scoring—online survey to rank short list of diseases	
			methodology review—Convened group of experts, examined and revised prioritization criteria, updated weightings applied to the criteria.	
			decision tree—a final Delphi round to arrive at a final list of ten disease decision instruments to guide users through considering available information and determining whether an emergency prioritization review is warranted	

Micieli et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research priorities	N/A	N/A	*Other:* value-of-information analyses	*Method:* N/A
Health condition: physical health—atrial fibrillation	**Gap criteria**	**Need criteria**	*Outcome:* N/A	
	Prioritization criteria	**Replication**		
Topic or focus area: treatment—device versus medication	*Criteria:* N/A	*Criteria:* N/A	*Criteria:* costs, potential value	N/A
	Final determination method: N/A	*Final determination method:* N/A	*Final determination method:* other—value of information analysis	**Challenges**
Funding organization(s): foundations, charitable organizations: Heart & Stroke Foundation	**Stakeholders**	**Stakeholders**	**Stakeholders**	Value-of-information analyses should be part of the process of planning new research, not the sole consideration.
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A	*Involve nonresearchers:* no—mentions patients used in model but not really choosing priorities	
	Composition: N/A	*Composition:* N/A	*Composition:* unclear	Models will necessarily
	Identification method: N/A	*Identification method:* N/A		
	Level of engagement: N/A	*Level of engagement:* N/A		

Study Details	Gaps	Needs	Prioritization	Impact
Setting: other country—Canada *Timeline:* N/A *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Identification method:* unclear *Level of engagement:* unclear **Inputs** *Technology or tools:* model created from data *Other inputs:* unclear	require many simplifying assumptions. It was restricted by simulations to only 250 iterations. Looked only at left atrial appendage occlusion devices versus dabigatran or warfarin.

Oortwijn et al., 2002

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 1998 *Aim:* identification of research priorities *Health condition:* physical health—low back pain *Topic or focus area:* service delivery and models of care *Funding organization(s):* other—likely Fund for Investigative Medicine *Setting:* other country—Netherlands *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* scored according to criteria *Other:* Reviewers evaluated proposals using objective data on policy relevance. **Prioritization criteria** *Criteria:* costs—economic consequences; potential value—expected effectiveness, potential impact on health policy; other—number of people affected *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes—experts in the health care field and experts in health technology assessment *Composition:* other—experts in the health care field and experts in health technology assessment *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* ranking, meeting	**Evaluation** *Method:* unclear—On the basis of this study, the Health Care Insurance Board adapted the application form and the judgment forms for the new annual cycle in 1999. *Outcome:* N/A **Replication** N/A **Challenges** In the context of the Fund for Investigative Medicine, no obvious cutoff points were described in the literature. The choice of scoring and weighing procedures is dependent on the time available for developing a priority-setting procedure and on the practical applicability of the procedure chosen. More research is needed to assess the construct validity of the procedure and to assess the influence of different reviewers.

Owlia et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* identification of research priorities	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A	**Strategy or method** ENHR **Prioritization criteria** *Criteria:* costs; other—political	**Evaluation** *Method:* N/A *Outcome:* N/A

Study Details	Gaps	Needs	Prioritization	Impact
Health condition: physical health *Topic or focus area:* other—national health research priorities *Funding organization(s):* government *Setting:* other country—Iran *Timeline:* N/A *Cost:* N/A	*Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* other—mixed quantitative and qualitative methods used for needs assessment **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* national workshops to train universities of medical sciences on needs assessment and priority-setting process. Following workshops, participatory research group in each university applied mixed quantitative and qualitative methods for needs assessment.	acceptability *Final determination method:* expert determination—priorities extracted by universities reviewed by working group and excluded irrelevant topics **Stakeholders** *Involve nonresearchers:* yes—national ENHR workshop with communities, researchers, health program managers, and policymakers *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* Statistical Package for the Social Sciences used for data analysis. *Other inputs:* A strategic committee in each university extracted research priorities from list of research needs according to criteria. The priorities were reviewed by a working group and the technology national office and irrelevant topics excluded.	**Replication** N/A **Challenges** One university determined priorities based on its own information-collection process instead of using uniform method.

Paskins et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): December 2015 *Aim:* identification of research priorities *Health condition:* physical health—osteoporosis *Topic or focus area:* treatment *Funding organization(s):* foundations, charitable organizations: British Trauma Society, Haywood Rheumatism Research and Development Foundation, and Arthritis Research UK	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rankings **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* E-survey asked respondents to indicate top priority for research across four topics and the	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Lack of specificity of the resultant top ten items and research questions.

Study Details	Gaps	Needs	Prioritization	Impact
Setting: *Timeline:* less than 6 months *Cost:* N/A			top three items within each topic; item ranking and latent class analysis were used to identify clusters with different combinations of binary responses.	

Payne et al., 2007

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* identification of research priorities *Health condition:* physical health—vaccine-related adverse events *Topic or focus area:* prevention *Funding organization(s):* government—the U.S. CDC *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Literature review* *Quantitative methods:* ranking research considerations *Consensus methods:* nominal group technique *Review source materials:* CDC, Food and Drug Administration (FDA), and DoD participants conducted a comprehensive review of diverse, scientific, and other credible information sources regarding potential adverse events. **Prioritization criteria** *Criteria:* burden of the disease—frequency and severity of occurrence; alignment with organization's mission—care and safety of veterans; feasibility *Final determination method:* consensus—At a follow-up conference call with CDC, FDA, and DoD participants and the National Vaccine Advisory Committee working group members, a final consensus was reached on final research priorities. **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers—CDC, FDA, and DoD researchers *Identification method:* stakeholder organizations—A joint meeting was convened with CDC, FDA, and DoD vaccine research experts in the winter of 2003. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* review of information;	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
			consensus process; papers written, reviewed, and ranked	

Rosenstock, Olenec, and Wagner, 1998

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research priorities	N/A	N/A	*Quantitative methods:* ranking list	*Method:* N/A
Health condition: physical health—occupational health and safety	**Gap criteria**	**Need criteria**	*Workshop, meeting, conference*	*Outcome:* N/A
	Criteria: N/A	*Criteria:* N/A	**Prioritization criteria**	**Replication**
	Final determination method: N/A	*Final determination method:* N/A	*Criteria:* potential value—"probability that research will make a difference"; other—seriousness of hazard, number of workers exposed, potential for risk reduction, sufficiency of existing research, expected trend in importance of topic	N/A
Topic or focus area: prevention	**Stakeholders**	**Stakeholders**		**Challenges**
Funding organization(s): government—National Institute for Occupational Safety and Health	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A		N/A
	Composition: N/A	*Composition:* N/A		
	Identification method: N/A	*Identification method:* N/A		
	Level of engagement: N/A	*Level of engagement:* N/A	*Final determination method:* vote, rating, rank—ranking, revision	
Setting: U.S.	**Inputs**	**Inputs**	**Stakeholders**	
Timeline: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	*Involve nonresearchers:* yes	
Cost: N/A	*Other inputs:* N/A	*Other inputs:* N/A	*Composition:* clinicians, researchers	
			Identification method: unclear	
			Level of engagement: collaboration	
			Inputs	
			Technology or tools: unclear	
			Other inputs: consensus-building process based on input from working groups, written comments, oral comments made at the public and town meetings, and other comments made during deliberations	

Stewart et al., 2013

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2001–2009	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: identification of research priorities	N/A	N/A	*Literature review*	*Method:* unclear—mentions impact but not specific ("The impact in the international arena was achieved through. . . .")
Health condition: physical health—gender and sex as determinants of health	**Gap criteria**	**Need criteria**	*Quantitative methods:* The Institute of Gender and Health conducted an online survey to seek input on strategic directions for the future and feedback on priorities, activities, and accomplishments. The survey data revealed strong support for the relevance of the five research priorities mentioned.	
	Criteria: N/A	*Criteria:* N/A		
	Final determination method: N/A	*Final determination method:* N/A		*Outcome:* N/A
Topic or focus area: etiology and risk factors—gender and sex as determinants of health	**Stakeholders**	**Stakeholders**		**Replication**
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A		N/A
	Composition: N/A	*Composition:* N/A		
	Identification method: N/A	*Identification method:* N/A		**Challenges**
Funding organization(s): other—none ("This research received no	*Level of engagement:* N/A	*Level of engagement:* N/A	*Workshop, meeting, conference:* meetings with individuals and groups,	initially faced an extremely limited research capacity and no directly aligned
		Inputs		

Study Details	Gaps	Needs	Prioritization	Impact
specific grant from any funding agency in the public, commercial, or not-for-profit sectors.") *Setting:* other country—Canada *Timeline:* more than 18 months *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Technology or tools:* N/A *Other inputs:* N/A	conference presentations *Other*: brainstorming sessions, information and feedback sessions, written submissions and discussions with potential partners **Prioritization criteria** *Criteria:* unclear—The purpose of the institute is to promote rigorous sex- or gender-sensitive health research that can expand the understanding of health determinants for each sex and improve health and health services for women, men, girls, and boys. *Final determination method:* vote, rating, rank—likely majority vote on the online survey **Stakeholders** *Involve nonresearchers:* yes—input from diverse target groups, including public *Composition:* patients and the public; researchers—unclear ("professional organizations and networks") *Identification method:* convenience—An invitation was issued on the institute's website requesting public input for potential research theme. *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* preliminary in-depth review and analysis of the reported research and research gaps, brainstorming sessions, information and feedback sessions, meetings with individuals and groups, conference presentations, written submissions and discussions with potential partners	funding partners, numerous challenges and even conflicts emerged, particularly in the early years, from the divergent interests of diverse stakeholders.

WHO, 1994

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): January 1993 *Aim:* identification of research priorities *Health condition:* physical	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A	**Strategy or method** *Literature review:* review the available epidemiological evidence (unclear whether this was an actual literature review)	**Evaluation** *Method:* N/A *Outcome:* N/A

Study Details	Gaps	Needs	Prioritization	Impact
health—public health *Topic or focus area:* diagnosis, assessment, epidemiology—environmental epidemiology *Funding organization(s):* other—WHO, Lazio region epidemiology unit, higher institute of health, Italy *Setting:* other country—Italy *Timeline:* less than 6 months *Cost:* N/A	*Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Workshop, meeting, conference:* Each participant submitted a paper that addressed suggested priorities for research in his or her field of expertise. Using the working papers as a basis of discussion, working groups were formed to clarify priorities in research areas. *Other:* Participants agreed on the issues that require more research. **Prioritization criteria** *Criteria:* potential value—public health relevance; other—opportunities for research; issues that require more research to avoid duplication *Final determination method:* consensus—just states "consensus" **Stakeholders** *Involve nonresearchers:* no—just "experts in environmental epidemiology and related fields" *Composition:* researchers *Identification method:* unclear—leading experts *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* workshop, working groups	**Replication** N/A **Challenges** N/A

Gaps and Needs

Butler et al., 2010; Chang et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): June–July 2010 *Aim:* combination of research gaps and needs *Health condition:* physical health—hip fracture *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ *Setting:* U.S.	**Strategy or method** *Workshop, meeting, conference:* List of gaps generated from review of in-progress research and prior systematic review was emailed to stakeholders. Stakeholder feedback was solicited in a subsequent conference call to refine research questions. Conference call summary and one-page revised research agenda were emailed to stakeholders for comment.	**Strategy or method** *Quantitative methods:* ranking; consultation with stakeholders—stakeholders asked to suggest research topics for which registry-based investigations would be most useful **Need criteria** *Criteria:* importance to stakeholders; other—whether or not research question could be addressed by randomized controlled trial	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The prioritization activity was limited to a small subsample of the stakeholder group, and the results may not reflect the

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: less than 6 months *Cost:* N/A	*Review in-progress research:* Recently completed search and currently ongoing outcome studies potentially address gaps. *Review source materials:* Extracted list of identified research gaps from prior systematic review. **Gap criteria** *Criteria:* unclear *Final determination method:* unclear—conference call described but unclear how or whether responses were narrowed down **Stakeholders** *Involve nonresearchers:* yes—conference call discussed the state of research and solicited feedback *Composition:* clinicians, payers, product makers, researchers, funders *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* reviewed prior systematic review, conference call	*Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, payers, product makers, researchers, funders *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* emails; conference calls *Other inputs:* Subgroup stakeholders (ten of 21) engaged in a two-part prioritization activity: rated importance of research concepts and ranked list of hip fracture outcomes measurement issues. They also ranked specific research questions and whether or not they could be addressed with a randomized controlled trial. All stakeholders were asked to provide feedback on ways to disseminate recommendations to improve research quality.	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	priorities of the general stakeholder population. This pilot project did not explicitly determine fundamental concepts implicit in this project, including the assumption that orthopedic surgeons collectively recognize that their clinical research would benefit from design and measurement improvements and that the optimal outcomes to measure are patient rather than complications based. The more challenging issues of incentivizing surgeons and epidemiologists to improve study quality received less-than-definitive recommendations.

Carey et al., 2010; Chang et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February 2010 *Aim:* combination of research gaps and needs *Health condition:* psychological health—integration of mental health/substance abuse *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Literature review:* a scan of the peer-reviewed literature on integrated care published since 2008 *Workshop, meeting, conference:* During an initial conference call, the stakeholder group recommended adding several gaps to the initial gap list. *Review in-progress research:* Identified ongoing research projects through searches of relevant databases. *Review source materials:* developed a comprehensive list of research gaps from the 2008 AHRQ review (Evidence) report	**Strategy or method** PICOT *Quantitative methods* *Consensus methods* **Need criteria** *Criteria:* costs; importance to stakeholders; feasibility, other—stage of research, generalizability, ethics *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers, funders *Identification method:* convenience	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Initial selection and engagement of stakeholders was often time-consuming, particularly in the case of federal stakeholders for whom several layers of approval were required. The absence of even modest compensation may

Study Details	Gaps	Needs	Prioritization	Impact
	Gap criteria *Criteria:* unclear *Final determination method:* other—Developed a comprehensive list of research gaps from the 2008 report and identified ongoing research projects through searches of relevant databases. A conference call with stakeholders added more to list. **Stakeholders** *Involve nonresearchers:* yes—The ten-member stakeholder panel included representatives of advocacy groups, researchers, providers of care, federal government funders of research, and professional organizations. *Composition:* patients and the public, clinicians, researchers, funders *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature review, conference call	*Level of engagement:* collaboration **Inputs** *Technology or tools:* online priority-setting exercise, for the initial prioritization; online meeting *Other inputs:* (1) Initial prioritization—online priority-setting exercise in which panelists were presented with 40 non–rank-ordered research gaps and asked to rate gaps twice, using different methods—first, a five-point Likert scale to rate "importance" and, second, online forced prioritization in which given 20 "chits" to assign to any gap with maximum of five. (2) At second online meeting, reviewed initial findings and refined the list of gaps. (3) Second round of prioritization—online exercise in which stakeholders were given a total of 12 chits to assign to nonranked list of 20 gaps, four of which could be used for any one gap, with the final list of 13 research needs incorporating all gaps receiving two or more chits from stakeholders. (4) Each future research need was developed into potential future study by specifying potential PICOTS; study design considerations; and, where relevant, power calculations. (5) Each future research need was evaluated for potential study design considerations against specific criteria (e.g., stage of research, generalizability, feasibility, cost-effectiveness, and ethics).		become a problem if there is a need to engage the same stakeholders long term for a variety of projects. Focusing stakeholders on the specific gaps identified in the report under review was sometimes challenging; there was a tendency to redefine the questions asked in the report or to pose questions that might be out of scope of the systematic review. The decision to split or group research needs required much thought and is a potential limitation to the exercise.

Carey et al., 2013

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps and needs *Health condition:* psychological health—mental health and substance abuse	**Strategy or method** *Review source materials:* EPC 2008 review **Gap criteria** *Criteria:* unclear *Final determination method:* expert determination: chosen by researchers	**Strategy or method** *Quantitative methods:* online prioritization exercise **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Initial selection and

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: treatment, service delivery, and models of care—integrating care *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	from EPC review **Stakeholders** *Involve nonresearchers:* N/A *Composition:* researchers *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* EPC review	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers, funders *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* teleconferences, email, web-based prioritization exercises *Other inputs:* N/A	*Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	engagement of stakeholders was often time consuming. The absence of even modest compensation may become a problem if needed to engage the same stakeholders long term for a variety of projects. Focusing stakeholder discussions on the specific gaps identified in the systematic review was sometimes challenging. Agreeing on an initial list of research needs was also challenging. Large number of identified future research needs.

Friedenreich, Marrett, et al., 2001

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February 2000–May 2001 *Aim:* combination of research gaps and needs *Health condition:* physical health—breast cancer *Topic or focus area:* etiology and risk factors *Funding organization(s):* government—Health Canada's Canadian Breast Cancer Initiative *Setting:* other country—Canada *Timeline:* greater than 18 months *Cost:* N/A	**Strategy or method** *Literature review* **Gap criteria** *Criteria:* other—addressed etiology *Final determination method:* unclear—Reviews were presented to and critiqued by other members of the working group, then revised accordingly. **Stakeholders** *Involve nonresearchers:* unclear—Reviews were conducted by members of the working group and two additional scientists. *Composition:* unclear—members of the working group and two additional scientists *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature review	**Strategy or method** *Workshop, meeting, conference* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* unclear—just states discussed **Stakeholders** *Involve nonresearchers:* unclear *Composition:* unclear—mentions experts but unclear what type *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* workshop	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact

Trikalinos et al., 2010; Chang et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps and needs *Health condition:* physical health—coronary artery disease *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** *Literature review:* searched literature to identify trials published after Stanford comparative effectiveness research (CER) report *Qualitative methods:* refined initial list of evidence gaps in key informants interviews resulting in an interim expanded list of gaps that was pruned according to post hoc criteria but without direct and explicit feedback from stakeholders *Review in-progress research:* NLM, undated, to identify ongoing studies in the field *Review source materials:* reviewed Stanford CER report **Gap criteria** *Criteria:* burden of the disease—prioritized according to relative frequency among patients who receive revascularization in the U.S.; importance to stakeholders; other—eliminated less important gaps based on data from the literature and inputs from the key informants provided during the previous steps *Final determination method:* other—literature review with additions by key informants **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, payers—medical director in a major payor, researchers funders—medical officer of a funding agency for cardiovascular research *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature review, one-on-	**Strategy or method** *Quantitative methods:* Key informants ranked the six priority subpopulations according to overall importance. *Other:* focused modeling to identify important parameters in future studies (i.e., decision analysis, cost-effectiveness analysis, value-of-information analysis) **Need criteria** *Criteria:* costs—"feasibility in terms of research costs," importance to stakeholders; potential value—"likelihood that the study will have nontrivial findings"; feasibility—"feasibility in terms of projected study duration"; other—"likelihood that the study will provide unbiased results" *Final determination method:* other—focused modeling **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians; payers—a medical director from a major payer; researchers; funders—medical officer of a funding agency for cardiovascular research *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* emailed questionnaire *Other inputs:* focused modeling	**Strategy or method** N/A **Prioritization criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Did not have the benefit of a thorough evaluation of the literature. It is possible that the identified evidence gaps have been addressed.

Study Details	Gaps	Needs	Prioritization	Impact
	one interviews			
	(1) Generated initial list of gaps by reviewing Stanford CER report and key informant input via teleconference			
	(2) Expanded list of gaps from additional input obtained in one-to-one interviews which were informed by literature search for trials published after Stanford CER report and search of NLM, undated, to identify ongoing studies.			
	(3) Pruned interim list to contain its scope and organized final list of gaps into four thematic areas of future research.			

Gaps and Priorities

Chalkidou et al., 2009

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2007	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	*Quantitative methods:* "scoring a list of research questions"	N/A	*Quantitative methods*	*Method:* N/A
Health condition: physical health—coronary artery disease	*Review source materials:* reviewed The 2007 EPC report	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: treatment	**Gap criteria**	*Criteria:* N/A	*Criteria:* costs; potential value; feasibility; other—current and projected use of the intervention, safety concerns, quality and quantity of research so far, most appropriate research design, uncertainty surrounding the use of the intervention	**Replication**
Funding organization(s): government—AHRQ	*Criteria:* other—"areas of greatest uncertainty"	*Final determination method:* N/A		N/A
Setting: U.S.	*Final determination method:* vote, rating, rank—via scoring of research questions	**Stakeholders**	*Final determination method:* vote, rating, rank—via scoring of research questions	**Challenges**
Timeline: N/A		*Involve nonresearchers:* N/A		Time-consuming process.
Cost: N/A	**Stakeholders**	*Composition:* N/A	**Stakeholders**	Unclear whether all the different treatment pathways were included in analysis.
	Involve nonresearchers: yes—hospitals, payers, product industry, clinicians, researchers, patients and consumers, government agencies	*Identification method:* N/A	*Involve nonresearchers:* yes—hospitals, payers, product industry, clinicians, researchers, patients and consumers, government agencies	Nonexperts in the working group found it challenging to understand the key issues and gaps in the current evidence.
	Composition: patients and the public, clinicians, payers, product makers; researchers; other—hospitals, government agencies	*Level of engagement:* N/A	*Composition:* patients and the public; clinicians; payers; product makers; researchers; other—hospitals, government agencies	Unclear whether all members of the working group were applying their scores in the same way.
	Identification method: convenience—used "the healthcare decisionmakers involved in the pilot"	**Inputs**	*Identification method:* convenience: used "the healthcare decisionmakers involved in the pilot"	
	Level of engagement: collaboration	*Technology or tools:* N/A	*Level of engagement:* collaboration	
	Inputs	*Other inputs:* N/A		
	Technology or tools: N/A			

116

Study Details	Gaps	Needs	Prioritization	Impact
	Other inputs: scored research questions, discussion with additional research information, another round of scoring with ranking		**Inputs** *Technology or tools:* not specified *Other inputs:* scored research questions, discussion with additional research information, another round of scoring with ranking	

Crews et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps and priorities *Health condition:* physical health—chronic kidney disease (CKD) *Topic or focus area:* prevention, treatment, diagnosis, assessment, epidemiology *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* 6–12 months *Cost:*	**Strategy or method** *Researcher-only topic identification* *Review source materials:* clinical practice guidelines and perspective pieces published by CKD thought leaders **Gap criteria** *Criteria:* N/A *Final determination method:* expert determination **Stakeholders** *Involve nonresearchers:* N/A *Composition:* researchers *Identification method:* purposive *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Experts developed list of topics through an iterative process informed by review of clinical practice guidelines and perspective publications by CKD thought leaders.	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods* **Prioritization criteria** *Criteria:* burden of the disease; potential value; other—degree of uncertainty *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, payers, researchers, health professional societies, funders *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* stakeholders list and rank topics; experts assessed feasibility of topics	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Topics developed prior to stakeholders' input and without review of ongoing systematic reviews. Stakeholders included only patient advocacy organizations and not patients or nonphysician medical professionals. Individual stakeholder rankings could substantially influence overall final rankings and not reflect full range of opinions because the group of stakeholders was small.

Crowley et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): June–September 2010 *Aim:* combination of research gaps and priorities *Health condition:* physical health—ischemic heart disease *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ	**Strategy or method** *Literature review:* update via PubMed of the MEDLINE search used in the original CER *Review in-progress research:* NLM, undated *Review source materials:* Researchers worked with authors of original CER to identify needs. **Gap criteria** *Criteria:* unclear *Final determination method:* other—	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs**	**Strategy or method** *Quantitative methods:* ranking **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, payers, product makers, funders	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Optimal size of stakeholder groups remains unclear, and the extent to which a change in group size might have affected the findings is unknown.

Study Details	Gaps	Needs	Prioritization	Impact
Setting: U.S. *Timeline:* less than 6 months *Cost:* N/A	review of ongoing and recently published studies **Stakeholders** *Involve nonresearchers:* N/A *Composition:* researchers *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Technology or tools:* N/A *Other inputs:* Researchers reviewed the CER with authors, updated literature review, and reviewed NLM, undated.	*Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* conference call *Other inputs:* N/A	Face-to-face meetings may have facilitated presentation of available evidence and allowed more opportunity for stakeholders to discuss the reasoning for their specific rankings than teleconferencing could allow. The scope of this project was limited to areas identified as part of the original CER and subsequent deliberations with CER authors and stakeholders. This analysis therefore likely omits important areas for future research.

Cutress et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2016–2017 *Aim:* combination of research gaps and priorities *Health condition:* physical health—breast surgical research *Topic or focus area:* treatment *Funding organization(s):* not explicitly reported *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	**Strategy or method** *Other:* Experts iteratively modified document with key themes and research priorities. Prioritization criteria committee agreed on key topics for the gap analysis. **Gap criteria** *Criteria:* N/A *Final determination method:* other—iterative process **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* convenience—Section leads were identified on the basis of individual interests and expertise, stakeholder organizations. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Association of Breast Surgery Academic and Research Committee, comprising research-active breast surgeons, trainees, and	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* free text responses in survey *Quantitative methods:* gap analysis survey to rate importance of research gaps **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—overall priority score used for final ranking of proposed research questions **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations—circulated to Association of Breast Surgery membership by email and at a conference *Level of engagement:* collaboration **Inputs** *Technology or tools:* SurveyMonkey software for data collection.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
	patient representation, agreed on key topics gap analysis should focus on. Section leads identified and were responsible for enlisting further experts and providing a summary of existing knowledge, key research questions, and proposed future research to address gaps. Document was iteratively modified until all contributors considered key themes and until research priorities had been identified.		*Other inputs:* gap analysis survey in which research gaps were rated on a ten-point Likert scale based on importance and assessed to identify any additional research gaps that should be included. The survey circulated by email and at a conference. Simple statistics summarized ratings and thematic analysis of free text.	

Doyle et al., 2005

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	*Consult with stakeholders:* Task force members were given the opportunity to nominate topics to be considered, from which a list of topics for further prioritization would be developed.	N/A	*Consensus methods:* After gaps were identified by systematic review, topics were discussed, and consensus was reached.	*Method:* N/A
Health condition: physical health—public health		**Need criteria**		*Outcome:* N/A
Topic or focus area: etiology and risk factors: public health interventions mapped against global health risk	*Review source materials:* identified gaps using prioritization criteria	*Criteria:* N/A	*Other:* Each member was asked to identify their prioritized ten topics by considering the agreed to criteria.	**Replication**
	Stakeholders select outcomes, topics, questions, prioritization criteria: Reviewed models of how research topics have been prioritized by organizations to identify evidence-based and strategic criteria for setting priorities.	*Final determination method:* N/A		N/A
		Stakeholders	**Prioritization criteria**	**Challenges**
Funding organization(s): government—Victorian Health Promotion Foundation, Australia; The UK Health Department, UK		*Involve nonresearchers:* N/A	*Criteria:* burden of the disease; other—importance to developing countries, avoidance of duplication, opportunity for action	Process unable to be completely exhaustive and therefore did not set out to emulate more structurally formal, resource intensive projects.
		Composition: N/A		
		Identification method: N/A		
Setting: other country—N/A		*Level of engagement:* N/A	*Final determination method:* other—A final top-15 priority list was produced by aggregating the topic choices of the responding members and listing in order of the most chosen topics.	The priorities list may seem weighted to interventions less relevant to developing countries.
	Group discussion with eventual consensus on which criteria to consider during prioritization	**Inputs**		
Timeline: N/A	**Gap criteria**	*Technology or tools:* N/A		
Cost: N/A	*Criteria:* burden of the disease; importance to stakeholders—"importance to developing countries"; other—"avoidance of duplication," "opportunity for action"	*Other inputs:* N/A	**Stakeholders**	
			Involve nonresearchers: yes	
			Composition: clinicians, policymakers; other—representing organizations responsible for improving population health, representing the health promotion, those able to influence research	
	Final determination method: other—eventual consensus that each member would broadly consider four factors when prioritizing their chosen topics for prioritization		*Identification method:* convenience—Participants in the project were selected based on their background and organizational responsibility and their willingness to participate.	
	Stakeholders			
	Involve nonresearchers: yes		*Level of engagement:* collaboration—	
	Composition: clinicians, policymakers,			

119

Study Details	Gaps	Needs	Prioritization	Impact
	other		A final top-15 priority list was produced by aggregating the topic choices of the responding members and listing in order of the most-chosen topics.	
	Identification method: convenience— Participants in the project were selected based on their background and organizational responsibility and their willingness to participate.			
	Level of engagement: collaboration		**Inputs**	
	Inputs		*Technology or tools:* N/A	
	Technology or tools: N/A		*Other inputs:* Chose topics and these were aggregated. Teleconferences and email communication	
	Other inputs: N/A			

Fun et al., 2019

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2016	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	*Literature review*	N/A	*CHNRI*	*Method:* yes—The analysis focused on three impact categories, which were informing policy, knowledge production, and benefits to health and health sector, based on the payback framework by Kwan et al., 2007, and the CIHR framework. The impact category of benefits on health and the health sector was set out to show benefits that could or were expected to result in improved service delivery, cost savings, improved health, or increased equity.
Health condition: physical health	*Review source materials:* Malaysia's strategic plans for national development	**Need criteria**	**Prioritization criteria**	
Topic or focus area: treatment—universal access and quality health care	**Gap criteria**	*Criteria:* N/A	*Criteria:* burden of the disease— magnitude, severity; potential value— answerability; feasibility	
	Criteria: cost, potential value, feasibility	*Final determination method:* N/A	*Final determination method:* vote, rating, rank—ranking	
Funding organization(s): other—no direct funding received for this study	*Final determination method:* other— review of literature and national strategic plan	**Stakeholders**	**Stakeholders**	
		Involve nonresearchers: N/A	*Involve nonresearchers:* yes	
Setting: other country— Malaysia	**Stakeholders**	*Composition:* N/A	*Composition:* clinicians, researchers, funders	
Timeline: N/A	*Involve nonresearchers:* yes	*Identification method:* N/A	*Other:* "decisionmakers" (unclear whether policy or financial decisions)	*Outcome:* Semistructured interviews with principal investigator and project team members in a workshop setting for project impact assessment. Most funded projects achieved some level of policy impact, suggesting that disseminated research on prioritized areas with policymaker engagement could increase likelihood of research evidence integration into policy. However, there was no
Cost: N/A	*Composition:* clinicians; researchers; funders; other—"decisionmakers" (unclear whether policy or financial decisions)	*Level of engagement:* N/A	*Identification method:* purposive—all participants of the NIH Research Week and a research priority–setting workshop, as well as emailed to 85 stakeholders who were invited but could not attend	
		Inputs		
	Identification method: stakeholder organizations—200 questionnaires were distributed to all participants of the NIH Research Week and a research priority–setting workshop, as well as emailed to 85 stakeholders who could not attend	*Technology or tools:* N/A	*Level of engagement:* collaboration	
		Other inputs: N/A	**Inputs**	
	Level of engagement: collaboration		*Technology or tools:* N/A	
	Inputs		*Other inputs:* scoring of research gaps, calculating of scores for prioritization	
	Technology or tools: N/A			
	Other inputs: N/A			

120

Study Details	Gaps	Needs	Prioritization	Impact

				comparative research impact of prioritized with nonprioritized research. Policymaker engagement availability was also studied.
				Replication
				N/A
				Challenges
				Projects assessed included only those funded by NIH. Specifically assessed projects grouped under the Universal Access and Quality Healthcare research cluster; hence, findings may not be applicable for other Ministry of Health research funding initiatives.
				Inherent subjectivity of self-reporting and timing of impact assessment could affect results.
				Stakeholder inclusivity proved to be a challenge.

Gaynes et al., 2012; Gaynes et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	*Framework tool:* used information from the draft review to develop the relevant framework tool for each evidence gap	N/A	*Quantitative methods:* rank the evidence gaps in order of priority	*Method:* N/A
Health condition: psychological health—attention deficit hyperactivity disorder (ADHD)	*Review in-progress research:* NLM, undated, HSRProj, NIH RePORTER, and the International Clinical Trials Registry Project	**Need criteria**	*Workshop, meeting, conference:* "Calls"	*Outcome:* N/A
		Criteria: N/A		**Replication**
		Final determination method: N/A		N/A
Topic or focus area: treatment, diagnosis, assessment, epidemiology	*Review source materials:* Developed list of gaps based on information gleaned from a draft review.	**Stakeholders**	**Prioritization criteria**	**Challenges**
	Gap criteria	*Involve nonresearchers:* N/A	*Criteria:* burden of the disease—represents a significant disease burden, large proportion, or priority population; importance to stakeholders—to consider their own perspectives and the interests of their constituents; potential value—potential for significant health impact, significant economic impact; potential risk from inaction—potential risk from inaction, addresses inequities—addressing inequities and vulnerable populations; other—Effectiveness Health Care	Scheduling challenges led to incomplete participation from some stakeholders.
Funding organization(s): government—AHRQ	*Criteria:* N/A	*Composition:* N/A		Some calls were dominated by stakeholders who were more naturally inclined to present their opinions, which may have led to the crowding out of the opinions of others.
Setting: U.S.	*Final determination method:* expert determination—literature and source material review	*Identification method:* N/A		The report was based on a draft of the final comparative effectiveness
Timeline: N/A		*Level of engagement:* N/A		
	Stakeholders	**Inputs**		
Cost: N/A		*Technology or tools:* N/A		
		Other inputs: Unclear		

Study Details	Gaps	Needs	Prioritization	Impact
	Involve nonresearchers: no—EPC		program selection criteria,	review, so specifics of the final report may differ slightly from what was reported here.
	Composition: researchers, including those with experience in pharmacology, psychiatry, education, epidemiology, and screening tools		*Final determination method:* vote, rating, rank—ranking	Some gaps may have appeared quite similar.
	Identification method: purposive—Potential stakeholders were identified in consultation with the AHRQ task order officer and during an internal planning meeting.		**Stakeholders**	Some stakeholders may have been more accustomed to considering research gaps and needs from their particular field of work and might have found it difficult to interpret and prioritize research questions developed and organized by other authors.
	Level of engagement: N/A		*Involve nonresearchers:* yes	
	Inputs		*Composition:* patients and the public; clinicians; payers; policymakers; researchers; funders; other—educators, individuals with knowledge of health service delivery systems or disparities among patients with ADHD	
	Technology or tools: N/A		*Identification method:* purposive—Potential stakeholders were identified in consultation with AHRQ task order officer and during an internal planning meeting.	The dominant challenge was in identifying appropriate cut points for priority levels.
	Other inputs: N/A		*Level of engagement:* collaboration	
			Inputs	
			Technology or tools: conference calls using GoToMeeting, an online prioritization tool developed by the authors	
			Other inputs: Stakeholders also received a list of ongoing studies developed by the project team after reviewing titles and short descriptions of research studies obtained through searching online research registries. In the Round 1, each stakeholder was given a total of 14 stars, which they could distribute among 29 gaps. No single gap could get more than four stars from a single person. In Round 2, the stakeholders received nine stars to distribute among 16 evidence gaps, and no one gap could get more than three stars from a single person.	

Gelfman et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2016	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	*Literature review*	N/A	*Workshop, meeting, conference*	*Method:* N/A
	Gap criteria	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Health condition: physical health—heart failure	*Criteria:* unclear	*Criteria:* N/A	*Criteria:* importance to stakeholders	**Replication**
	Final determination method: unclear	*Final determination method:* N/A	*Final determination method:* vote, rating, rank—ranking	N/A
Topic or focus area:	**Stakeholders**	**Stakeholders**		**Challenges**

Study Details	Gaps	Needs	Prioritization	Impact
symptom management *Funding organization(s):* other—states authors' individual funding but not specific to this study *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	*Involve nonresearchers:* unclear—appears to be researchers only *Composition:* unclear *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature review	*Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* conference calls	N/A

Gordon et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): July 2016–April 2017 *Aim:* combination of research gaps and priorities *Health condition:* physical health—human immunodeficiency virus (HIV), psychological health—alcohol *Topic or focus area:* basic science, treatment *Funding organization(s):* government—National Institute on Alcohol Abuse and Alcoholism *Setting:* U.S.; other country, South Africa *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *CHNRI* **Gap criteria** *Criteria:* other *Final determination method:* expert determination—four rounds of consultations between four and six authors to reduce initial set of research questions **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers *Identification method:* snowballing *Level of engagement:* collaboration: Only small subset of TWG reduced the initial set of research questions. **Inputs** *Technology or tools:* initial TWG of experts *Other inputs:* TWG identified and invited 37 global experts to attend a meeting, who then invited two to five individuals to form an expanded TWG of 174 global and local experts.	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *CHNRI* **Prioritization criteria** *Criteria:* potential value; addresses inequities; feasibility; other—answerability; effectiveness, applicability *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* no—scoring exercise conducted by 41 researchers, 15 field of public health, three NGOs *Composition:* researchers *Identification method:* convenience *Level of engagement:* collaboration **Inputs** *Technology or tools:* Used email to send and return scoring sheets. *Other inputs:* TWG, potential working group members	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Not comprehensive Close scores Responder bias English language proficiency Low response rate Biased toward researchers and scientists

Guise et al., 2010; Chang et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): July 2010 *Aim:* combination of research gaps and priorities *Health condition:* physical health—breast cancer prevention *Topic or focus area:*	**Strategy or method** *Qualitative methods:* review source materials **Gap criteria** *Criteria:* importance to stakeholders—Input from these researchers led to the addition of questions to the questionnaires reflecting these	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A	**Strategy or method** *Framework tool* *Qualitative methods:* open-ended questions to identify priority research topics—e.g., "what do you believe are the most important research questions in preventing breast cancer?"—asked during Introduction section prior to	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Unclear

Study Details	Gaps	Needs	Prioritization	Impact
prevention—using treatment to prevent, treatment *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	priorities. *Final determination method:* expert determination—Input from these researchers led to the addition of questions to the questionnaires reflecting these priorities. **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers *Identification method:* other—part of prior systematic review *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* informational interviews with researchers to guide development of prioritization questionnaires—Interviews were reviewed for key content and common themes using grounded theory. Gaps identified in prior comparative effectiveness research report were used to guide development of the prioritization questionnaire.	*Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	itemized listing *Quantitative methods:* rate list of research questions as high, medium, or low priority *Workshop, meeting, conference:* webinar **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rate items as high, medium, or low priority to determine the top ten priorities in rank order based on the frequency that individual stakeholders rated the item as high priority **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers, funders *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* online questionnaire, 90-minute webinar for stakeholders The webinar described the purpose of the project, summarized the findings and future research gaps identified from the CER, and concluded with a 30-minute question-and-answer and discussion session. The webinar was conducted via Adobe Connect. Immediately following the webinar, participants were emailed the link to the web-based questionnaire, a writeable PDF of the research prioritization questionnaire, and the presentation slides from the webinar. *Other inputs:* The two questionnaires differed in terminology depending on the population. Questionnaire I was oriented toward general readers, while questionnaire II used terminology familiar to clinicians and researchers.	

Study Details	Gaps	Needs	Prioritization	Impact
			The questionnaires were reviewed by the three key informants and the AHRQ task order officer, and the resulting questionnaires were piloted with a convenience sample of researchers, clinicians, and evidence review staff for ease of use, readability, face validity, and to provide time estimates for completion. Web-based questionnaires were created and administered via SurveyMonkey.	

Haider et al., 2016

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2015 *Aim:* combination of research gaps and priorities *Health condition:* physical health—surgical conditions *Topic or focus area:* treatment Funding organization(s): professional association—American College of Surgeons; government—NIH *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Literature review* **Gap criteria** *Criteria:* addresses inequities *Final determination method:* other—literature review conducted by planning committee **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers—The planning committee for the summit consisted of leadership from the National Institutes of Health—National Institute of Minority Health and Disparities and American College of Surgeons. *Identification method:* purposive—experts identified via published peer review articles *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature review conducted by planning committee	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Literature review:* The planning committee (experts) conducted a literature review to derive five thematic topics. Also, the review was used to identify and invite experts to summit. *Consensus methods:* building exercises at professional meeting *Workshop, meeting, conference:* After presentations and discussion, each participant generated a list of research questions and priorities ranked in order of importance. *Stakeholder select outcomes, topics, questions, prioritization criteria:* To organize the content discussed in the summit, the planning committee conducted a literature review to identify potential thematic areas **Prioritization criteria** *Criteria:* addresses inequities *Final determination method:* consensus—Following a keynote presentation, small breakout sessions were held to discuss and debate the research questions. Building on these sessions, the full group of symposium participants participated in a formal, agenda-setting exercise to develop and refine a set of recommendations on national priorities in surgical disparities research. **Stakeholders**	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The results represent the views of clinicians and scientists at a single research meeting (*N* = 60). Representation of experts in a wider array of surgical disparities would have been beneficial.

Study Details	Gaps	Needs	Prioritization	Impact
			Involve nonresearchers: yes—researchers and clinicians	
			Composition: clinicians, researchers	
			Identification method: stakeholder organizations—NIH and American College of Surgeons identified experts	
			Level of engagement: collaboration	
			Inputs	
			Technology or tools: N/A	
			Other inputs: summit of experts, consensus building exercises after literature review, expert presentations	

Lawn et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	*CHNRI*	N/A	*CHNRI*	*Method:* N/A
Health condition: physical health—birth asphyxia	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: prevention	*Criteria:* N/A	*Criteria:* N/A	*Criteria:* potential value	**Replication**
Funding organization(s): foundations, charitable organizations—BMGF; other—CHNRI	*Final determination method:* expert determination	*Final determination method:* N/A	*Final determination method:* consensus	Yes
Setting: other country—N/A	**Stakeholders**	**Stakeholders**	**Stakeholders**	**Challenges**
Timeline: N/A	*Involve nonresearchers:* no	*Involve nonresearchers:* N/A	*Involve nonresearchers:* yes—not specified except example of parents experiencing neonatal death	N/A
Cost: N/A	*Composition:* researchers	*Composition:* N/A	*Composition:* patients and the public	
	Identification method: purposive—individuals with wide range of technical expertise and regional representation	*Identification method:* N/A	*Identification method:* N/A	
	Level of engagement: collaboration	*Level of engagement:* N/A	*Level of engagement:* collaboration	
	Inputs	**Inputs**	**Inputs**	
	Technology or tools: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Other inputs: research questions drafted by core team expert group based on recent systematic reviews and previous survey of experts	*Other inputs:* N/A	*Other inputs:* previous survey, systematic review, computed research priority scores	

Lazarus et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	Framework tool	N/A	*Quantitative methods:* rank	*Method:* N/A
Health condition: physical health—chronic venous leglc	Review source materials	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Gap criteria	*Criteria:* N/A	*Criteria:* importance to stakeholders, potential value, feasibility	**Replication**
	Criteria: patient centeredness	*Final determination method:* N/A	*Final determination method:* vote, rating, rank—ratings of importance and impact	Yes—EPC Future Research Needs series
	Final determination method: expert determination—systematic review;	**Stakeholders**		
		Involve nonresearchers:		

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: treatment *Funding organization(s):* government—AHRQ, U.S. Department of Health and Human Services *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	authors identified gaps **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers—authors of systematic review *Identification method:* purposive—authors of systematic review *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* EPC Future Research Needs team (subset of authors of systematic review) identified research gaps using PICOTS framework	*Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, payers *Identification method:* convenience—chosen by key informants, technical expert panel *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Round 1 rank-identified gaps; Round 2 final prioritization ranking top five choices in each list of gaps and top-tier needs developed into research questions using PICOTS.	**Challenges** N/A

Lewis et al., 1999

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): September 1996–November 1997 *Aim:* combination of research gaps and priorities *Health condition:* physical health—nephrology *Topic or focus area:* treatment *Funding organization(s):* professional association—American Nephrology Nurses' Association (ANNA) *Setting:* U.S. *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** *Consensus methods:* Delphi technique **Gap criteria** *Criteria:* importance to stakeholders—"most significant problems affecting patients" *Final determination method:* other—All open responses were included, collated, and categorized. **Stakeholders** *Involve nonresearchers:* no—members of American Nephrology Nurses Association only *Composition:* clinicians *Identification method:* stakeholder organizations—ANNA *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* In Round 1 of 3, members of ANNA responded to letter asking about most significant problems in nephrology that could be addressed by research; content	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Consensus methods:* Delphi technique **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* other—ranking **Stakeholders** *Involve nonresearchers:* no *Composition:* clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Round 2 was a survey about synthesized priority list of open-ended responses to inquiry letter included in registration packets at ANNA's national symposium. Rated importance of topics to contributing to patient outcomes or quality of nursing using five-point scale. Also, listed the three top-ranked research priorities. Returned surveys at research booth at national	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Low response rate during Round 1 (< 1%)

Study Details	Gaps	Needs	Prioritization	Impact
	analysis of open-ended responses developed into a 21-item research survey of synthesized priority list.		symposium. Weighted research priority scores were calculated. To derive this score, the priority levels at first, second, and third priority were given weights of 3, 2, and 1, respectively. These weights were then multiplied by the number of respondents picking a particular question. Mean importance scores were also calculated for each question or topic based on individual respondents' ratings for each question. Round 3 included only nurses with a master's degree or higher, who were asked to rank top five research priorities. Five top-ranked research priorities. Ranking based on each question receiving one point if it was rated among the top five priorities.	

Mitnick et al., 2016

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps and priorities *Health condition:* physical health—multidrug-resistant tuberculosis *Topic or focus area:* treatment *Funding organization(s):* other—Some authors received funding from the Task Force of the Global Drug Resistant TB Initiative. *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** *Literature review:* reviewed all PubMed-indexed documents that cited the 2008 publication of the research agenda *Review source materials:* guidelines, documents, websites, and publications published between January 2008 and August 2013 from relevant organizations and authorities **Gap criteria** *Criteria:* other—Gaps identified in literature review and source documents were consolidated and formulated into research questions. *Final determination method:* open-ended listing—all identified gaps included but consolidated and categorized **Stakeholders** *Involve nonresearchers:* no—research subgroup of a working group *Composition:* researchers *Identification method:* convenience	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Literature review* *Quantitative methods* **Prioritization criteria** *Criteria:* importance to stakeholders not specifically stated *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* no—"PMDT research stakeholders" *Composition:* researchers *Identification method:* snowballing *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* literature review	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The representativeness of survey respondents is not known. Stakeholder input was sought only on issues that were raised in the sources consulted. Possible bias, especially toward applied research, which was prioritized in the previous research agenda on which the current exercise was based.

128

Study Details	Gaps	Needs	Prioritization	Impact
	Level of engagement: collaboration			
	Inputs			
	Technology or tools: N/A			
	Other inputs: N/A			

Mootz et al., 1997

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): July 1996	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	*Literature review:* qualitative review of the literature	N/A	*Consensus methods:* nominal group consensus process	*Method:* N/A
				Outcome: N/A
Health condition: physical health—chiropractic health services	**Gap criteria**	**Need criteria**	**Prioritization criteria**	**Replication**
	Criteria: N/A	*Criteria:* N/A	*Criteria:* importance to stakeholders	N/A
Topic or focus area: treatment	*Final determination method:* expert determination	*Final determination method:* N/A	*Final determination method:* consensus	
				Challenges
Funding organization(s): unclear	**Stakeholders**	**Stakeholders**	**Stakeholders**	N/A
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A	*Involve nonresearchers:* yes	
Setting: U.S.	*Composition:* researchers	*Composition:* N/A	*Composition:* clinicians, policymakers, researchers, funders	
Timeline: N/A	*Identification method:* convenience	*Identification method:* N/A	*Identification method:* purposive—multidisciplinary expert panel	
Cost: N/A	*Level of engagement:* collaboration	*Level of engagement:* N/A	*Level of engagement:* collaboration	
	Inputs	**Inputs**	**Inputs**	
	Technology or tools: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Other inputs: qualitative review of the literature	*Other inputs:* N/A	*Other inputs:* nominal group-consensus process (expert panel members recorded top research priorities individuals)	

National Health Research Authority, 2018; Kapiriri et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research gaps and priorities	Other—combination of the CHNRI, Delphi, 3D Combined Approach Matrix, and ENHR methods	N/A	*Workshop, meeting, conference:* final stakeholder consultation and consensus workshop	*Method:* unclear
				Outcome: N/A
Health condition: physical health	**Gap criteria**	**Need criteria**	*Other:* combination of the CHNRI, Delphi, 3D CAM, and ENHR methods	**Replication**
Topic or focus area: other—national health research priorities	*Criteria:* other—identification and prioritization of some key research ideas by a small select group of stakeholders based on the Ministry of Health National Health Strategic Plan 2017–2021 and the health research gap analysis	*Criteria:* N/A		N/A
		Final determination method: N/A	**Prioritization criteria**	
Funding organization(s): government		**Stakeholders**	*Criteria:* costs—affordability; addresses inequities; feasibility—answerability; novelty; potential for translation; effectiveness; sustainability; ethical	**Challenges**
		Involve nonresearchers: N/A		N/A
Setting: other country—Zambia		*Composition:* N/A		
		Identification method: N/A		
Timeline: N/A	*Final determination method:* other—stakeholder review and consultation	*Level of engagement:* N/A	*Final determination method:* vote, rating, rank—rating of CHNRI adapted criteria	
		Inputs		
Cost: N/A	**Stakeholders**	*Technology or tools:* N/A		
	Involve nonresearchers: Unclear	*Other inputs:* N/A	**Stakeholders**	

Study Details	Gaps	Needs	Prioritization	Impact
	Composition: N/A *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* A gap analysis based on a desk review of health research priorities set in previous years in Zambia was conducted under specific thematic areas over the five years. Small, select groups of stakeholders were identified, and key research ideas were prioritized based on the Ministry of Health National Health Strategic Plan 2017–2021. The health research gap analysis and wider stakeholder consultation took place via email. The National Health Research Authority revised and consolidated research ideas and topics and circulated that document to the wider research community, policymakers, program implementers, and health development partners.		*Involve nonresearchers:* yes *Composition:* clinicians; policymakers; researchers; other—health development partners *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* *Other inputs:* A "yes" to each of the questions was rated as "1.0"; where there was a doubt, the score was "0.5"; and where it was a definite "no," the score was "0.0." For each research idea, a weighted average was then calculated, ranging between 0 and 1, and the ideas were then ranked; the idea with the highest score was ranked as of higher priority.	

Ota et al., 2008

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): October 2003 to June 2004 *Aim:* combination of research gaps and priorities *Health condition:* physical health—pediatric rheumatology *Topic or focus area:* treatment *Funding organization(s):* professional association—Childhood Arthritis and Rheumatology Research Alliance (CARRA) *Setting:* other country—U.S. and Canada *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** *Other:* Delphi **Gap criteria** *Criteria:* importance to stakeholders Included all topics listed *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* no *Composition:* patients and the public *Identification method:* stakeholder organizations—CARRA *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* open-ended listing—all responses included **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* CARRA members sent first questionnaire with open-ended format to solicit research ideas. Responses were complied and tallied. Participants could respond via email,	**Strategy or method** *Other:* Delphi approach **Prioritization criteria** *Criteria:* importance to stakeholders, feasibility *Final determination method:* other—Ranking **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Second questionnaire asked participants to check off their top ten choices from a new questionnaire. Third questionnaire	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
		fax, or postal mail.	asked participants to rank order each option.	

Panchal et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): October–December 2016 *Aim:* combination of research gaps and priorities *Health condition:* physical health—cardiac arrest *Topic or focus area:* treatment *Funding organization(s):* professional association *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Qualitative methods:* questionnaire and ranking *Quantitative methods:* questionnaire and ranking **Gap criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians; other—experts *Identification method:* purposive—An invitation to participate in the Delphi process was sent by email to 100 cardiac arrest experts identified from the author list of the 2015 American Heart Association Guidelines for CPR and ECC published in November 2015. *Level of engagement:* collaboration **Inputs** *Technology or tools:* online questionnaire *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* ranking survey **Prioritization criteria** *Criteria:* potential value—"greatest impact on public health" *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians; other—experts *Identification method:* purposive—An invitation to participate in the Delphi process was sent by email to 100 cardiac arrest experts identified from the author list of the 2015 American Heart Association Guidelines for CPR and ECC published in November 2015 *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Initial participation rate from the group of experts was lower than expected. Purposeful selection of experts for the panel may have allowed better representation and balancing of the wide range of experts in the field. Inability to reach consensus on a prioritized list of the top three gaps.

Rudan, Agrawal, et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): June 2017–February 2018 *Aim:* combination of research gaps and priorities *Health condition:* physical health—respiratory health *Topic or focus area:* unclear *Funding organization(s):* government—UK NIHR *Setting:* other country—	**Strategy or method** *CHNRI* **Gap criteria** *Criteria:* cost—affordable within the context; burden of the disease—addresses significant problem; potential value—addresses inequities; feasibility, other—sustainability; safety (unintended consequences); scalability; answerability *Final determination method:* open-ended listing—Experts listed research topics.	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs**	**Strategy or method** *CHNRI* **Prioritization criteria** *Criteria:* costs—affordable within the context; burden of the disease—address significant problem; potential value—addresses inequities; feasibility, other—sustainability; safety (unintended consequences); scalability; answerability *Final determination method:* vote, rating, rank—overall priority score used for final ranking of proposed	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Scorers in the CHNRI exercise were not independent from the experts who set the topics. Small sample size. Some of the scorers

Study Details	Gaps	Needs	Prioritization	Impact
UK and four partner countries: Bangladesh, India, Malaysia, and Pakistan *Timeline:* N/A *Cost:* N/A	**Stakeholders** *Involve nonresearchers:* no *Composition:* researchers *Identification method:* stakeholder organizations: investigators from NIHR Global Health Research Unit in Respiratory Health (RESPIRE) *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* RESPIRE investigators submitted research ideas.	*Technology or tools:* N/A *Other inputs:* N/A	research questions **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers *Identification method:* stakeholder organizations—RESPIRE researchers *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* RESPIRE researchers scored ideas using ten preagreed criteria: answerability, feasibility, effectiveness, applicability, affordability, potential for cross-country scalability, burden size, equity, safety, and sustainability. The scorers were asked to assess each proposed research idea according to the ten questions posed as "yes" (coded as 1 point), "no" (0 points), "not sure" (0.5 points) or "don't know" (input left blank). The received scores allowed computation of "research priority scores" for each criterion and the overall priority score, the latter being used for the final ranking of the proposed research questions. In addition, the "average expert agreement" was computed for each proposed research question to demonstrate the level of controversy related to each proposed research question among the scorers who took part in the CHNRI exercise.	commented that more detail could have affected their scores. Some scorers may have missed the most recent update on some ideas.

Rudan, Arifeen, et al., 2011

Date(s): N/A *Aim:* combination of research gaps and priorities *Health condition:* physical health—childhood pneumonia *Topic or focus area:* treatment	**Strategy or method** *CHNRI* **Gap criteria** *Criteria:* unclear *Final determination method:* open-ended listing—list of research questions by technical expert group **Stakeholders**	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A	**Strategy or method** *CHNRI* **Prioritization criteria** *Criteria:* importance to stakeholders, potential value, addresses inequities, feasibility, other—answerability *Final determination method:* vote, rating, rank—ranking based on CHNRI	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Some good ideas may not have been included in the

Study Details	Gaps	Needs	Prioritization	Impact
Funding organization(s): Other—One author received support as a consultant of the CHNRI Global Forum for Health Research. *Setting:* other country—Switzerland *Timeline:* N/A *Cost:* N/A	*Involve nonresearchers:* no—technical expert group *Composition:* researchers—A wide range of technical expertise and regional representation were recruited to participate. *Identification method:* purposive—wide range of technical expertise and regional representation were recruited *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* list of research questions drafted by technical expert group based on recent systematic reviews and survey of experts	*Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	scoring **Stakeholders** *Involve nonresearchers:* yes—not specified but appears to include parents of children who have died of pneumonia *Composition:* patients and the public *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* survey (not specified if online) *Other inputs:* computation of research priority scores	initial list of research options. Some ideas might be included because of excessive media interest. The conclusions represent the opinion of a limited group of involved people.

Saldanha et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps and priorities *Health condition:* physical health—dry eye *Topic or focus area:* treatment *Funding organization(s):* government—NIH *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** *Review source materials:* recommendations from the American Academy of Ophthalmology **Gap criteria** *Criteria:* alignment with organization's mission *Final determination method:* other—reviewed guidelines and developed questions **Stakeholders** *Involve nonresearchers:* no—two individuals with project *Composition:* researchers *Identification method:* N/A—translated recommendations from professional practice guidelines *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* ranked research questions **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder organizations—surveyed members of the Tear Film and Ocular Surface Society, an international (90-country) nonprofit organization *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Involved only clinicians. Low response rates. All respondents were identified through one organization. Only reviewed the recommendations issued by one ophthalmology-based professional society.

Sanders et al., 2010; Chang et al., 2012; Myers et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): June–July 2010 *Aim:* combination of research gaps and	**Strategy or method** *Literature review:* three database searches to identify ongoing and recently published studies relevant to	**Strategy or method** N/A **Need criteria**	**Strategy or method** *Qualitative methods:* Input was solicited from the stakeholders in reviewing and developing the list of	**Evaluation** *Method:* yes—Reported that a more formal comparison of the different

133

Study Details	Gaps	Needs	Prioritization	Impact
priorities	the identified evidence gaps	*Criteria:* N/A	research gaps.	methods used (specifically, a comparison of the qualitative and quantitative processes) would be discussed in a future report
Health condition: physical health—stable ischemic heart disease	*Review in-progress research:* NLM, undated	*Final determination method:* N/A	*Quantitative methods:* Stakeholders were asked to rate the importance of further research exploring various characteristics using a five-point Likert scale; also asked to rank their top five research priorities from the complete list of needs and to rank research areas from 1 to 16.	
Topic or focus area: treatment	*Review source materials:* Reviewed prior CER.	**Stakeholders**		*Outcome:* N/A
Funding organization(s): government—AHRQ	**Gap criteria**	*Involve nonresearchers:*		**Replication**
Setting: U.S.	*Criteria:* N/A	*Composition:* N/A		No
Timeline: less than 6 months	*Final determination method:* other	*Identification method:*	**Prioritization criteria**	
Cost: N/A	**Stakeholders**	*Level of engagement:*	*Criteria:* importance to stakeholders— "Importance"	**Challenges**
	Involve nonresearchers: no	**Inputs**	*Potential value:* impact on modulating ACE-I/ARB effectiveness or harms in patients	Several of the stakeholders felt that they had expertise in related fields (cardiovascular trials, medical decisionmaking, patient advocacy) but were not particularly well-qualified in this specific domain. The optimal size of the stakeholder group is unclear—a larger number of rankings might have allowed a greater spread of scores, or sufficient variation in the distribution of scores, to assist in discriminating between different research areas. It is unclear whether specific tools or processes were challenging because of their methodology or because of the specific evidence base (or lack thereof) for the clinical domain. The time and interaction available with the stakeholder group was limited.
	Composition: researchers	*Technology or tools:* Stakeholder input was solicited and received through web- and paper-based survey techniques, email, and group discussions via teleconference.	*Final determination method:* vote, rating, rank—ranking	
	Identification method: other—Authors conducted gap identification.	*Other inputs:* N/A	**Stakeholders**	
	Level of engagement: collaboration		*Involve nonresearchers:* yes	
	Inputs		*Composition:* patients and the public, clinicians, payers, policymakers, product makers, funders	
	Technology or tools: N/A		*Identification method:* purposive— Efforts were made to assemble a balanced group of individuals representing a range of perspectives. The group included individuals with experience in cardiology and individuals with expertise in decision modeling and comparative effectiveness research.	
	Other inputs: review of literature; NLM, undated; and systematic reviews and meta-analyses		*Level of engagement:* collaboration— Group discussions were moderated by the EPC investigators to avoid domination of the discussion by any particular group and to ensure that all participants had an equal opportunity to ask questions and express their views.	
			Inputs	
			Technology or tools: Stakeholder input was solicited and received through web- and paper-based survey techniques, email, and group discussions via teleconference.	
			Online tool for ranking	

Study Details	Gaps	Needs	Prioritization	Impact
			Other inputs: Decision model and value-of-information analyses used to quantitatively prioritize research needs. 1st conference call—stakeholder orientation to project's objective, original CER report, and proposed methods for prioritization process; rated and ranked research priorities. 2nd conference call—Stakeholders reviewed results of initial exercise. Distributed to stakeholder group additional materials including list of potential priority-setting criteria, results of initial survey prioritization, and summary evidence tables from original CER report; asked to rank 16 research areas from 1 to 16 in order of importance. Final conference call—focused on quantitative findings from decision analytic model. Final survey distributed to stakeholder group that included the qualitative ranking results, recently published literature, and ongoing trials. Areas ranked again from 1 to 16, which produced the final ranking.	

Wazny et al., 2013

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps and priorities *Health condition:* physical health—diarrhea *Topic or focus area:* treatment, diagnosis, assessment, epidemiology, service delivery, models of care—health policy systems *Funding organization(s):* foundations, charitable organizations—BMGF *Setting:* other country—	**Strategy or method** *CHNRI* **Gap criteria** *Criteria:* N/A *Final determination method:* other—Team leaders collected research questions submitted by their experts, eliminated redundancies, and chose the top questions to be scored. **Stakeholders** *Involve nonresearchers:* no—"global experts" only *Composition:* researchers *Identification method:* convenience—Researchers identified team leaders by their scientific and subject expertise, contributions, and	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *CHNRI* **Prioritization criteria** *Criteria:* burden of the disease; potential value—likelihood of effectiveness; addresses inequities—effect on equity; feasibility—likelihood of deliverability *Final determination method:* vote, rating, rank—research questions scored using five criteria **Stakeholders** *Involve nonresearchers:* no—global and technical experts *Composition:* researchers *Identification method:* snowballing: Experts identified other experts.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Many duplicate questions. Standardization between teams was challenging. Unable to achieve equal representation from all regions across all areas.

135

Study Details	Gaps	Needs	Prioritization	Impact
Canada *Timeline:* N/A *Cost:* N/A	willingness to lead respective working groups. Each team leader was instructed to assemble a diverse virtual team of approximately 20 global experts representing different genders, age groups, and geographical locations; also aimed to have representation of high-, middle-, and low-income countries. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* collected research questions from virtual teams of technical experts organized by ten areas of focus		*Level of engagement:* collaboration **Inputs** *Technology or tools:* unclear—asked experts to rate research questions *Other inputs:* international workshop	

Needs and Priorities

Abma and Broerse, 2010

Date(s): 2003–2007 *Aim:* combination of research needs and priorities *Health condition:* physical health—spinal cord injury, neuromuscular diseases, renal failure, asthma or chronic obstructive pulmonary disease, burns, diabetes *Topic or focus area:* treatment *Funding organization(s):* foundations, charitable organizations— Netherlands Asthma Foundation, Diabetes Foundation, the Dutch Burns Foundation and the Kidney Fund; other— Netherlands organization for health research and care innovation *Setting:* other country— Netherlands	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** Other—dialogue model **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—Focus groups discussed top priorities **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* phase 1— literature study, semistructured interviews phase 2—consultation with stakeholder groups via focus groups	**Strategy or method** Other—dialogue model **Prioritization criteria** *Criteria:* patient centeredness *Final determination method:* other—dialogue **Stakeholders** *Involve nonresearchers:* yes—patients *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations—The project team identified and contacted patient and professional organizations. *Level of engagement:* collaboration **Inputs** *Technology or tools:* questionnaire *Other inputs:* dialogue method. Phase 3—literature study, interviews, and focus group translated to research topics that formulated a prioritization questionnaire for patients; priorities of professionals determined by consensus using Delphi technique	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Criticism of validity and credibility. Challenge to develop ideas of how to interest researchers and other professionals in joining these processes.

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: more than 18 months *Cost:* N/A			Phase 4—dialogue meeting with mixed stakeholder groups to further prioritize priorities; results discussed in plenary session and agreement reached on one priority list	

Al-Khatib et al., 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2012–2014 *Aim:* combination of research needs and priorities *Health condition:* physical health—implantable cardioverter-defibrillator use in older patients *Topic or focus area:* treatment *Funding organization(s):* government—Patient-Centered Outcomes Research Institute *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Consultation with stakeholders:* Stakeholders reviewed and suggested additional questions for prioritization, review source materials **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—Final list was circulated to the stakeholder team for review to ensure that edits reflected their proposed additions. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; policymakers; researchers; funders; other—representatives from relevant professional societies *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* ranking by survey **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; policymakers; researchers; funders; other—representatives from relevant professional societies *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* online ranking *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** List of future research needs may not reflect the full range of future research possibilities. Small number of stakeholders. Cannot determine with certainty the degree to which prioritized future research needs have already been addressed. Did not explore the potential study design considerations for the prioritized topics.

Alvarez et al., 2010

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): July 2009–January 2010 *Aim:* combination of research needs and priorities *Health condition:* physical health *Topic or focus area:* unclear—"health research priorities" *Funding organization(s):* unclear *Setting:* other country—	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** *Consensus methods:* nominal group technique **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—nominal group technique **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, researchers *Identification method:* purposive—representative of diverse professions	**Strategy or method** *Quantitative methods* *Workshop, meeting, conference* **Prioritization criteria** *Criteria:* burden of the disease; importance to stakeholders; feasibility *Final determination method:* vote, rating, rank—ranking and ratification **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians; researchers; other—educators, sociologists, health	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Cuba *Timeline:* 6–12 months *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	and functions *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	technologists, engineers, biologists, microbiologists *Identification method:* purposive—representative of diverse professions and functions *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* Stage I—Health research priorities were ranked using the Hanlon Method Stage II—Expert meeting confirmed or rejected health priorities and ratified priorities by consensus; used five-point scale to rate how relevant research would be to contributing to solving health problem. Stage III—meetings to ratify shared priorities using criteria (e.g., scores based on Hanlon Method; most frequently identified priorities in stage I; priorities proposed by the expert team	

Arora et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2012–2016 *Aim:* combination of research needs and priorities *Health condition:* physical health *Topic or focus area:* prevention *Funding organization(s):* other—cofunded by the Indian Council of Medical Research; the CHNRI secretariat; and the INCLEN Trust International, New Delhi *Setting:* other country—India *Timeline:* more than 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *CHNRI* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—all research ideas accepted **Stakeholders** *Involve nonresearchers:* yes *Composition:* policymakers, researchers, funders, other *Identification method:* snowballing, stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *CHNRI* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—scoring **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; civil society; policymakers; researchers, funders; other—public health functionaries *Identification method:* snowballing, stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* solicitation of research ideas from nationwide network via online software designed	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
			by International Clinical Epidemiology Network. *Other inputs:* literature review, committee meetings	

Boney et al., 2015; Boney et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): October 2013–May 2015 *Aim:* combination of research needs and priorities *Health condition:* physical health—anesthesia and perioperative medicine *Topic or focus area:* treatment *Funding organization(s):* other—nonprofit *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—For each theme identified during the classification process, between four and 15 "summary" questions were drafted. These were agreed by consensus to encompass all the individual questions received from the first survey **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers *Identification method:* stakeholder organizations—Provider and patient organizations were approached. *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey, face-to-face classification meeting with steering group and JLA advisor *Other inputs:* committee—For each theme identified during the classification process, between four and 15 "summary" questions were drafted. These were agreed by consensus to encompass all the individual questions received from the first survey.	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—Used modified Delphi process to achieve consensus on final top ten priorities (i.e., two rounds of working groups of discussion and ranking questions) then final plenary sessions when working groups came together and collectively discussed emerging aggregate ranking, final ranking, and top-ten priorities presented to the group and ratified by mutual consensus. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, product makers *Identification method:* stakeholder organizations—Provider and patient organizations were approached. *Level of engagement:* collaboration **Inputs** *Technology or tools:* modified Delphi process *Other inputs:* final prioritization workshop with meetings with assigned groups	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** None

Brender, McNair, and Nøhr, 1999; Brender, Nøhr, and McNair, 2000

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Strategy or method** *Other:* Delphi, brainstorming, collecting comments, feedback **Need criteria** *Criteria:* importance to stakeholders	**Strategy or method** *Quantitative methods:* questionnaire for rating **Prioritization criteria** *Criteria:* importance to stakeholders	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A

Study Details	Gaps	Needs	Prioritization	Impact
health—health informatics *Topic or focus area:* service delivery and models of care—health informatics *Funding organization(s):* other—Virtual Centre for Health Informatics, Aalborg University *Setting:* other country—Denmark *Timeline:* N/A *Cost:* N/A	**Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* unclear **Stakeholders** *Involve nonresearchers:* unclear—states experts *Composition:* Other—experts *Identification method:* unclear—experts *Level of engagement:* coproduction **Inputs** *Technology or tools:* questionnaire *Other inputs:* N/A	*Final determination method:* vote, rating, rank—rating by questionnaire **Stakeholders** *Involve nonresearchers:* unclear—experts *Composition:* other—experts *Identification method:* unclear—experts *Level of engagement:* collaboration **Inputs** *Technology or tools:* questionnaire *Other inputs:* N/A	**Challenges** Influence of the size of the expert panel on the quality of the findings and conclusions. Another round on the questionnaire might have improved the accuracy of the data and might have added where "wholes" have been identified.

Britton et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2016 *Aim:* combination of research needs and priorities *Health condition:* physical health—Barrett's oesophagus and gastro-oesophageal reflux disease *Topic or focus area:* treatment, diagnosis, assessment, epidemiology *Funding organization(s):* foundations, charitable organizations—This work was supported by the research charity of the British Society of Gastroenterology (CORE). *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** JLA PSP **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing; all uncertainties listed in survey **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Other:* charity organizations *Identification method:* stakeholder organizations *Level of engagement:* collaboration, N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—discussion and ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; other—charity representatives *Identification method:* stakeholder organizations—Volunteers from tenth national Barrett's Symposium in April 2016 formed a steering committee that identified the broader interested parties. *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* workshop	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Survey was done in English. Primarily internet-based with no means of calculating response rates. Respondents are likely to be white and middle class and to have a high background educational level. Ideas or information might have been lost or misunderstood during process of creating short list. Smaller sample size than some studies using JLA techniques. Other countries with different health care provisions might produce different priorities.

Study Details	Gaps	Needs	Prioritization	Impact
Buckley, Grant, and Glazener, 2013				
Date(s): 2007–2009 *Aim:* combination of research needs and priorities *Health condition:* physical health—urinary incontinence *Topic or focus area:* treatment *Funding organization(s):* government—Department of Health, Cochrane Collaboration's Prioritization Fund, JLA, MRC *Setting:* other country—UK *Timeline:* more than 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Uncertainties identified via survey of clinician and patient organization, recommendations of systematic reviews, and clinical guidelines. Uncertainties were collated, combined, and excluded when addressed in systematic review and rewritten in PICO format.	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—nominal group techniques **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Participating organizations short-listed ten questions; nominal group techniques were used to reach consensus at final workshop on a ranked list of ten uncertainties.	**Evaluation** *Method:* yes *Outcome:* Five studies funded and several more in development addressed six of the ten priorities; only one of the ten prioritized questions has no specific related activity been identified **Replication** Yes **Challenges** Concerns that the specific questions identified and prioritized by patient and clinician consensus might be altered by the body's own topic prioritization process. Some questions prioritized were very broad in scope, making it potentially challenging to determine the appropriate research response.
Claassen et al., 2014				
Date(s): August–November 2012 *Aim:* combination of research needs and priorities *Health condition:* psychological health—suicide *Topic or focus area:* prevention *Funding organization(s):* professional association—American Association of Suicidology, Suicide Awareness Voices of Education; foundations,	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* research goals and criteria for assessing the merits of any goal nominated via stakeholder survey **Prioritization criteria** Participants nominated important criteria for assessing merits of research goals **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public,	**Strategy or method** *Consensus methods:* Three subsequent rounds stakeholder survey utilizing RAND's online modified Delphi system, ExpertLens™. **Prioritization criteria** *Criteria:* burden of the disease—potential burden reduction; importance to stakeholders; patient centeredness—acceptability to suicidal persons and family members; addresses inequities—impact on vulnerable population groups; feasibility—projected ease and speed of real-world uptake *Final determination method:*	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Unsolved conceptual, logistic, and ethical barriers were not addressed directly. Unable to find a sampling strategy that would capture the voices of a national suicide prevention constituency in a truly representative manner.

Study Details	Gaps	Needs	Prioritization	Impact
charitable organizations—American Foundation for Suicide Prevention, Jed David Satow Foundation; other—Saul Feldman (private donor). The RAND Corporation underwrote the survey. *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A		clinicians, policymakers, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* Round 1 used the Zoomerang.com platform online survey. *Other inputs:* N/A	consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* stakeholder organizations—individuals whose names appeared on any of a number of relevant organizational lists *Level of engagement:* collaboration **Inputs** *Technology or tools:* four-round stakeholder survey. Subsequent rounds used RAND's online modified Delphi system, ExpertLens™. *Other inputs:* feedback and discussion	A substantial number of stakeholders completed fewer than four total rounds. The central tendencies analytic strategy used here may or may not be the most innovative, informed, or promising approach. The survey methods created technical difficulties for some.

Consortium from Altarum et al., 2012; Scutchfield et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): "during 2011" *Aim:* combination of research needs and priorities *Health condition:* physical health—public health *Topic or focus area:* service delivery and models of care *Funding organization(s):* foundations, charitable organizations—Robert Wood Johnson Foundation *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Systematic review* *Workshop, meeting, conference*—working groups, webinars *Review in-progress research:* current research efforts of Robert Wood Johnson Foundation **Need criteria** *Criteria:* potential value *Final determination method:* unclear—Second webinar prioritized identified research topics. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, community-based organizations, clinicians, researchers *Identification method:* purposive—content and methodological expertise in public health services and systems research *Level of engagement:* collaboration **Inputs** *Technology or tools:* webinars *Other inputs:* systematic reviews, working groups	**Strategy or method** *Workshop, meeting, conference:* second webinar prioritized identified research topics *Other:* vetting and review by stakeholders **Prioritization criteria** *Criteria:* N/A *Final determination method:* other—vetting process including stakeholders; draft posted on website soliciting feedback **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* stakeholder organizations—membership organizations purposive—content and methodological expertise in public health services and systems research *Level of engagement:* collaboration **Inputs** *Technology or tools:* draft of research agenda hosted on website to solicit	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Lack of formal methods for incorporating the perspectives and preferences of community members.

Study Details	Gaps	Needs	Prioritization	Impact
			feedback and recommendations; webinar *Other inputs:* N/A	

Cottrell et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): May–August 2011 *Aim:* combination of research needs and priorities *Health condition:* physical health—vaginal delivery after cesarean *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* in-depth interviews with stakeholders to understand and refine evidence gaps **Need criteria** *Criteria:* other—"a particular emphasis on identifying potential nonmedical and contextual research questions" *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers, funders *Other:* legal liability, hospital administrator *Identification method:* stakeholder organizations—major stakeholder groups interested in vaginal birth after cesarean section *Level of engagement:* collaboration—conducted in-depth interviews with stakeholders to understand and refine evidence gaps, **Inputs** *Technology or tools:* N/A *Other inputs:* in-depth interviews	**Strategy or method** *Literature review:* topics were searched in the recent vaginal birth after cesarean literature *Qualitative methods:* Both structured questions and open-ended narrative responses were used to identify high-priority research topics and provide narrative text to indicate additional detail on the types of research they recommended. *Quantitative methods:* Stakeholders were asked to indicate whether the topic was of low, medium, or high priority for future research. **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers, funders *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* questionnaire	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The initial focus on questions about contextual and health system factors during the semistructured interviews in phase 1 could have primed the respondents to rank these items higher during the phase 2 prioritization. Small sample size of stakeholder panel limits the generalizability of findings. The group of clinicians was slightly larger than the other stakeholder groups.

Crowe, Rowe, et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): October 2012–September 2013 *Aim:* combination of research needs and priorities *Health condition:* physical health—hip and knee replacement for osteoarthritis	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* Open-ended listing **Stakeholders** *Involve nonresearchers:* yes	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: treatment *Funding organization(s):* government—NIHR *Setting:* other country—UK *Timeline:* more than 12 months to 18 months *Cost:* N/A	*Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Composition:* patients and the public, Clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Research questions were gathered via discussion groups, short survey, and analysis of interview records from people with hip problems conducted by Health Experience Research Group at University of Oxford.	*Composition:* patients and the public, Clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* interim prioritization—individual voting and group discussion. Final workshop: small group discussions and individual ranking; large group discussion, final ranking.	

Davila-Seijo et al., 2013

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): November 2011–October 2012 *Aim:* combination of research needs and priorities *Health condition:* physical health—dystrophic epidermolysis bullosa *Topic or focus area:* treatment *Funding organization(s):* other—Spain, Fundación para la Investigación Biomédica del Hospital Infantil del Niño Jesús *Setting:* other country—Spain *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* snowballing—asked all experts to identify other experts and justify their selection, stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* survey of uncertainties, review of resources (e.g., systematic review, consensus guidelines, UK Database of Uncertainties), collation (removal duplicates, consolidation categories), refined into PICO format	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—final prioritization workshop using nominal group technique **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* snowballing, stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey; video conference *Other inputs:* ranking exercise (online or paper survey); final prioritization workshop (nominal group techniques)	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Low number of participants. Difficulty in defining and finding expert clinicians because condition is a rare disease.

Deane et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders	**Evaluation** *Method:* N/A *Outcome:* N/A

Study Details	Gaps	Needs	Prioritization	Impact
health—Parkinson's disease *Topic or focus area:* treatment *Funding organization(s):* other—Parkinson's UK *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	*Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* open-ended listing—all uncertainties surveyed **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, Clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* *Consensus methods:* consensus meeting **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* survey *Other inputs:* consensus meetings	**Replication** Yes **Challenges** Not successful at recruiting participants of black and minority ethnic and care home populations. Priorities of relevance to all relevant populations may not have been identified. Small proportion of social care professionals. Exclusion of statements with less than three duplicate submissions could have introduced bias.
Elberse et al., 2012				
Date(s): December 2009–January 2011 *Aim:* combination of research needs and priorities *Health condition:* physical health—medical products for disease *Topic or focus area:* treatment *Funding organization(s):* government *Setting:* other country—Netherlands *Timeline:* Greater than 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Literature review:* desk study using scientific and gray literature and policy documents *Qualitative methods:* A participatory approach was developed based on the dialogue model and semistructured exploratory interviews. **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—described but not specific **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* stakeholder organizations—patient organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* literature review *Other inputs:* semistructured interviews	**Strategy or method** *Evidence mapping* *Qualitative methods:* semistructured in-depth consultation interviews with patient representatives and focus groups **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* other—described but not specific **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* stakeholder organizations—patient organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* literature review *Other inputs:* semistructured interviews and focus groups	**Evaluation** *Method:* yes—empowerment *Outcome:* "The project had an unintended impact on several patient groups, which is often witnessed during participatory processes: empowerment." The process resulted in a genuine impact: Patients' priorities were visibly incorporated in the advice, and participants recognized their input clearly. In addition, the unbiased and respectful facilitation provided patients and patient representatives the opportunity to contribute. **Replication** N/A **Challenges** Lack of insight in the extent to which the consulted patients were representative for the disease domain.

Study Details	Gaps	Needs	Prioritization	Impact
				Cannot rule out that there is an indirect influence of pharmaceutical companies on the needs-articulation of patients.
				It is unknown whether the articulated needs are relevant for similar patient groups in other western health systems.
				Finding a balance between the limiting predefined focus, necessary for the advisory process, and a sufficiently broad scope to enable patients to contribute their experiential knowledge.
				Finding a balance between creating advice relevant for many patient groups and obtaining precise, saturated data in the time available.
				Patient groups used different criteria for prioritization of their needs.

Eleftheriadou et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): January 2009–February 2010 *Aim:* combination of research needs and priorities *Health condition:* physical health—vitiligo *Topic or focus area:* treatment *Funding organization(s):* government—through a program grant funded by the NIHR *Setting:* other country—UK *Timeline:* more than 12 months to 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—all uncertainties listed in survey **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* N/A	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey, electronic voting *Other inputs:* workshop	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Response rate for the vitiligo PSP was rather low. Most of the uncertainties (during consultation) were broad and nonspecific or did not specify the comparator, the duration of treatment, or the population, when others from the research community were very focused.

Study Details	Gaps	Needs	Prioritization	Impact

Fernandez et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): August 2016–January 2018 *Aim:* combination of research needs and priorities *Health condition:* physical health—lower limb and pelvis fractures *Topic or focus area:* treatment *Funding organization(s):* professional association—British Orthopaedic Association and the UK Orthopaedic Trauma Society; government—NIHR Oxford Biomedical Research Centre *Setting:* other country—UK *Timeline:* more than 12 months to 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* convenience—steering group, stakeholder organizations: partner organizations of steering group *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey and paper *Other inputs:* Survey respondents submitted research uncertainties. information specialist used thematic analysis to define themes and subthemes, and the steering group verified decisions. Reviewed current research evidence, including clinical trials registries. Excluded questions in which high-quality evidence was found.	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—whole group consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* convenience: steering group, stakeholder organizations: partner organizations of steering group *Level of engagement:* collaboration **Inputs** *Technology or tools:* Interim prioritization survey online and paper formats. *Other inputs:* The interim prioritization survey used a five-point Likert scale to rate the importance level of each question. Participation was by open invitation and not restricted to respondents from the first survey. Questions were ranked by calculating a mean score per question, and the top 25 questions were taken to final workshop. The final workshop was a one-day multistakeholder workshop. Small groups independently ranked the top 25 questions, and the combined results of small group discussions were presented to whole group. A further round of small group discussions was conducted, then the whole group convened to establish a consensus on the top ten research priorities.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** It is possible that the research priorities reported still underrepresent those with permanent cognitive impairment.

Study Details	Gaps	Needs	Prioritization	Impact
Finer et al., 2017; Finer et al., 2018				
Date(s): 2018 *Aim:* combination of research needs and priorities *Health condition:* physical health—diabetes *Topic or focus area:* basic science, prevention, treatment, symptom management, service delivery/models of care *Funding organization(s):* foundations, charitable organizations—Diabetes UK *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* Open-ended listing: uncertainties using a questionnaire survey and organizing uncertainties **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers other—information specialist, JLA senior advisor *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* JLA PSP method gathering uncertainties using a questionnaire and organizing uncertainties	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking other—discussion **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; researchers; other—information specialist, JLA senior advisor *Identification method:* stakeholder organizations—Diabetes UK *Level of engagement:* collaboration **Inputs** *Technology or tools:* online and paper survey *Other inputs:* workshop	**Evaluation** *Method:* N/A states will be monitored *Outcome:* N/A **Replication** Yes **Challenges** Poor representation of some groups Low numbers of carers in PSP Underrepresentation and potential bias
Fischer et al., 2015				
Date(s): November 2012–September 2013 *Aim:* combination of research needs and priorities *Health condition:* physical health—"health care" *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* Medicaid medical director interviews and stakeholder interviews *Workshop, meeting, conference:* network meeting for topic identification, web conferences, review in-progress research **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—solicited research questions via stakeholder interviews **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers	**Strategy or method** *Quantitative methods:* medical directors' poll **Prioritization criteria** *Criteria:* importance to stakeholders, feasibility *Final determination method:* expert determination **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Incorporating clinically specialized stakeholders into broad discussions was challenging. Without an unbiased scoring system, were sometimes unable to compare the importance of different issues objectively. Reaching consensus complicated by broad range

Study Details	Gaps	Needs	Prioritization	Impact
		Identification method: stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* web conference *Other inputs:* topic identification at meeting with Medicaid medical director and Learning Network; medical director and stakeholder interviews; one-day web conference to solicit additional stakeholder input	*Other inputs:* medical director poll ratings; day webconference to solicit stakeholder input; working with AHRQ to review feedback and finalize ten priority topics	of stakeholder experience.

Foster et al., 2009

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): April–June 2007 *Aim:* combination of research needs and priorities *Health condition:* physical health—musculoskeletal problems *Topic or focus area:* treatment *Funding organization(s):* government—NIHR *Setting:* other country—UK *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Consensus methods:* Nominal Group Technique **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—nominal group technique **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, product makers, researchers, funders. Several participants were also involved in leading or contributing to the funding agendas of national research funding agencies. *Identification method:* purposive—National (UK) and international workshops *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Led by facilitators, workshop participants generated initial opinions and recommendations for future clinical trials; participants then contributed their suggestions to the group for discussion; and these suggestions were clarified and tabulated	**Strategy or method** *Consensus methods:* nominal group technique *Workshop, meeting, conference:* Recommendations were presented to an international forum at the World Conference of Physical Therapy. **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—nominal group technique **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, researchers *Identification method:* stakeholder organizations—World Confederation of Physical Therapy *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Recommendations were presented at an international forum and prioritized using five-point Likert scale (Strongly Disagree to Strongly Agree) to rate relative importance of each recommendation identified in earlier stage. Consensus level was set as the recommendations that received a median ranking of 4 or more and on which more than 75% agreed or strongly agreed.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Gadsby et al., 2012				
Date(s): 2010–2011 *Aim:* combination of research needs and priorities *Health condition:* physical health—type-1 diabetes *Topic or focus area:* treatment *Funding organization(s):* foundations, charitable organizations—Insulin Dependent Diabetes Trust charity *Setting:* other country—UK *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey. *Other inputs:* Uncertainties derived from initial exploratory workshop, UK Database of Uncertainties about the Effects of Treatments, and stakeholder survey. Uncertainties were collated, duplicates and already-answered questions removed, and converted all questions to PICO standard.	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—participants asked to agree on top ten uncertainties **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, Clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Interim priority-setting voting list consisted of uncertainties with more than ten original submissions; voters selected top ten uncertainties; and those with more than ten votes were included in final priority-setting workshop. Final priority-setting workshop: discussion, group rank order of uncertainties, and large group agreed on top ten.	**Evaluation** *Method:* N/A *Outcome:* Impact will be evaluated by monitoring research applications submitted and research funding granted in Type 1 diabetes. **Replication** Yes **Challenges** "[F]inal debate was dynamic and passionate, with people keen to see their interests represented in the final 10."
Gatchel et al., 2018				
Date(s): Early 2016–October 2017 *Aim:* combination of research needs and priorities *Health condition:* physical health—pain *Topic or focus area:* prevention, treatment, symptom management *Funding organization(s):* government—NIH *Setting:* U.S.	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A	**Strategy or method** *Consensus methods:* Subgroups proposed five to ten recommendations to the broader working group and discussed them until three to five recommendations emerged by consensus. *Workshop, meeting, conference:* Subgroups identified perceived gaps in the scientific literature; subgroups proposed five to ten recommendations to the broader working group and discussed them until three to five key recommendations emerged by	**Strategy or method** *Quantitative methods:* scored based on perceived important *Workshop, meeting, conference* **Prioritization criteria** *Criteria:* importance to stakeholders—received importance; potential value—greatest impact on pain; other—decided that "greatest near-term value was to optimize public health strategies to educate patients on managing pain *Final determination method:* other—Recommendations were scored	**Evaluation** *Method:* N/A *Outcome:* Recommendations led to a federal pain research strategy **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: more than 18 months *Cost:* N/A	*Other inputs:* N/A	consensus. *Other:* External advisers were consulted by the subgroups as needed. **Need criteria** *Criteria:* potential risk from inaction—how that gap impeded the goal of preventing pain, feasibility—feasibility of addressing gets through research *Final determination method:* other—consensus **Stakeholders** *Involve nonresearchers:* yes—health care providers, researchers, patient advocacy group representatives *Composition:* patients and the public, clinicians *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Working group divided into subgroups by research area. Subgroups identified perceived gaps in the scientific literature; external advisers were consulted as needed; recommendations were proposed to broader working group and discussed until three to five key recommendations emerged by consensus. Draft findings from all the work were presented at a public meeting in June 2017, and feedback was solicited from the public.	according to the following criteria: impact, near-term value, and perceived importance; high scores of 12 or more were deemed a top recommendation. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Working groups	

Gray et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—wound care *Topic or focus area:* treatment	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—all uncertainties solicited via survey	**Strategy or method** *JLA:* modified **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Funding organization(s): government—NIHR *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	*Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* purposive—contacts at the inception of the National Institute for Health Research Collaboration for Leadership in Applied Health Research and Care Greater Manchester wound care program *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* N/A	*Composition:* patients and the public, clinicians *Identification method:* purposive—identified through contacts at inception of the NIHR Greater Manchester wound care program *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* workshop	
Gregório et al., 2012				
Date(s): September 2010 *Aim:* combination of research needs and priorities *Health condition:* psychological health—"mental health" *Topic or focus area:* other—national mental health research priorities *Funding organization(s):* unclear *Setting:* other country—Brazil *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** CHNRI **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—All listed research questions were accepted. **Stakeholders** *Involve nonresearchers:* yes *Composition:* policymakers, researchers *Identification method:* purposive—equitable distribution based on gender, geography, areas of knowledge, impact of the scientific research and availability *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** CHNRI **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* Vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians; policymakers; researchers; other—"the coordinator" *Identification method:* purposive—Criteria for the selection of experts were equitable distribution based on gender, geography, and areas of knowledge; the impact of their scientific research; and their availability for replying to the questionnaires. *Level of engagement:* collaboration **Inputs** *Technology or tools:* questions emailed to participants *Other inputs:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Only 56% of the selected experts completed the questionnaires. The coordinator arbitrarily selected the experts.

Study Details	Gaps	Needs	Prioritization	Impact
Gupta et al., 2003				
Date(s): January 2001–April 2002	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*Workshop, meeting, conference*	*Quantitative methods:* rankings via questionnaire	*Method:* N/A
Health condition: physical health—multidrug-resistant tuberculosis	**Gap criteria**	**Need criteria**	*Workshop, meeting, conference:* working group's annual meeting	*Outcome:* N/A
	Criteria: N/A	*Criteria:* importance to stakeholders		**Replication**
Topic or focus area: treatment	*Final determination method:* N/A	*Final determination method:* other—working group meeting presentations, discussions	**Prioritization criteria**	N/A
	Stakeholders		*Criteria:* importance to stakeholders	
Funding organization(s): government—U.S. Agency for International Development; foundations, charitable organizations—BMGF	*Involve nonresearchers:* N/A	**Stakeholders**	*Final determination method:* vote, rating, rank	**Challenges**
	Composition: N/A	*Involve nonresearchers:* yes		None
	Identification method: N/A	*Composition:* clinicians, policymakers, WHO, researchers	**Stakeholders**	
	Level of engagement: N/A	*Identification method:* stakeholder organizations—National Tuberculosis Program	*Involve nonresearchers:* yes	
	Inputs		*Composition:* clinicians, researchers	
Setting: other country—Peru and Estonia; international working group meetings	*Technology or tools:* N/A	*Level of engagement:* collaboration	*Identification method:* stakeholder organizations	
	Other inputs: N/A	**Inputs**	*Level of engagement:* collaboration	
Timeline: more than 12 months to 18 months		*Technology or tools:* N/A	**Inputs**	
		Other inputs: international working group meeting; followed by interactive process of emails, phone calls, and smaller meetings to refine prioritized research agenda	*Technology or tools:* N/A	
Cost: N/A			*Other inputs:* ranking	
Hart et al., 2017				
Date(s): March 2014	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*JLA PSP*	*JLA*	*Method:* N/A
Health condition: physical health— inflammatory bowel disease	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Criteria: N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
Topic or focus area: treatment	*Final determination method:* N/A	*Final determination method:* open-ended listing—all uncertainties	*Final determination method:* vote, rating, rank—ranked and debated until consensus reached	Yes
	Stakeholders	**Stakeholders**		**Challenges**
Funding organization(s): professional association—The British Society of Gastroenterology and Crohn's and Colitis UK provided core funding for the project in equal shares.	*Involve nonresearchers:* N/A	*Involve nonresearchers:* yes	**Stakeholders**	The response rate to the questionnaire cannot be determined because the number of potential respondents reached online is not known.
	Composition: N/A	*Composition:* patients and the public, clinicians	*Involve nonresearchers:* yes	
	Identification method: N/A	*Identification method:* N/A	*Composition:* patients and the public—patients, carers; clinicians—dieticians, general practitioners, nurses, surgeons, gastroenterologists; other—patient organization representatives	
	Level of engagement: N/A	*Level of engagement:* collaboration		The website was in English, which may have restricted access. Specific questions were merged on related themes into broad questions that could be voted on, and information
	Inputs	**Inputs**	*Identification method:* stakeholder organizations—The survey was advertised through a combination of direct emails and newsletters to members of the partner organizations,	
	Technology or tools: N/A	*Technology or tools:* online survey		
Setting: other country—	*Other inputs:* N/A	*Other inputs:* N/A		

Study Details	Gaps	Needs	Prioritization	Impact
UK *Timeline:* N/A *Cost:* N/A			including Crohn's and Colitis UK, and through links on relevant websites. *Level of engagement:* collaboration **Inputs** *Technology or tools:* electronic survey questionnaire *Other inputs:* workshop	may have been lost in the process. The process is time-consuming and relies on participants volunteering and committing their time. There may be a bias in the respondents. There may be different research priorities in different countries with different health care systems.

Healy et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): November 2015–December 2016 *Aim:* combination of research needs and priorities *Health condition:* Other—trial recruitment *Topic or focus area:* other—randomized trial recruitment *Funding organization(s):* government—The Health Services Research Unit, University of Aberdeen, receives core funding from the Chief Scientist Office of the Scottish Government Health Directorates; other—support of JLA *Setting:* other country—Ireland and UK *Timeline:* more than 12 months to 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—list of uncertainties received and passed on to prioritization **Stakeholders** *Involve nonresearchers:* yes—Membership included equal representation from researchers, clinicians, trial experts, the public and/or their representatives, as well as JLA staff. *Composition:* patients and the public, clinicians, researchers other—JLA staff *Identification method:* purposive—identified list of experts *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* Collated and analyzed initial survey responses to develop questions.	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* other—how trial recruitment might be improved *Final determination method:* consensus—Facilitators guided the participants through the process of discussing the questions and agreeing, by consensus, a top ten from within them. **Stakeholders** *Involve nonresearchers:* yes: Membership included equal representation from researchers, clinicians, trial experts, the public and/or their representatives, as well as JLA staff. *Composition:* patients and the public, clinicians, researchers other—JLA staff *Identification method:* purposive—Purposive sampling; identified list of experts. *Level of engagement:* collaboration **Inputs** *Technology or tools:* survey *Other inputs:* ranking, face-to-face workshop, JLA advisor	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The voice of the public may have been overshadowed by that of research academics and practitioners. The dynamic of each (workshop) group was slightly different. The submission of a large volume of data in the initial survey raised challenges around data management. Involvement of a wide stakeholder group in a face-to-face meeting.

Study Details	Gaps	Needs	Prioritization	Impact
Heazell et al., 2015				
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*JLA PSP*	*JLA*	*Method:* N/A
Health condition: physical health—stillbirth	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: prevention	*Criteria:* N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
Funding organization(s): foundations, charitable organizations—Tommy's and the Holly Martin Stillbirth Research Fund	*Final determination method:* N/A	*Final determination method:* open-ended listing—included all listed uncertainties	*Final determination method:* consensus—prioritization consensus workshop	Yes
Setting: other country—UK	**Stakeholders**	**Stakeholders**	**Stakeholders**	**Challenges**
Timeline: N/A	*Involve nonresearchers:* N/A	*Involve nonresearchers:* yes	*Involve nonresearchers:* yes	Parents and professionals answering the questionnaire may not be fully representative.
Cost: N/A	*Composition:* N/A	*Composition:* patients and the public, clinicians	*Composition:* patients and the public, clinicians, researchers, charity worker, commercial organization, "other roles"	Could not determine the response rate to the questionnaire as the number of potential respondents reached online was unknown.
	Identification method: N/A	*Identification method:* stakeholder organizations	*Identification method:* stakeholder organizations	The questionnaire was internet based, although paper versions were available, if required.
	Level of engagement: N/A	*Level of engagement:* collaboration	*Level of engagement:* collaboration	The website was in English, which may have restricted access. Selection of unanswered research questions based in part on the frequency of responses may result in research questions being rated as a low priority if they addressed challenging issues or social taboos, such as domestic and partner violence.
	Inputs	**Inputs**	**Inputs**	It is important that relevant priorities are addressed in other high-income settings.
	Technology or tools: N/A	*Technology or tools:* N/A	*Technology or tools:* online prioritization survey	Some of the unanswered questions proposed here are very broad and cannot be addressed by a single research study.
	Other inputs: N/A	*Other inputs:* N/A	*Other inputs:* Prioritization web survey resulted in 48 highest ranked unanswered questions; second web survey asked participants to select up to ten most important research questions; and the 25 highest ranked questions were discussed at workshop, resulting in 11 research priorities.	

Study Details	Gaps	Needs	Prioritization	Impact
Henschke et al., 2007				
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—low back pain *Topic or focus area:* treatment *Funding organization(s):* government—NHMRC *Setting:* other country—Australia *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* modified Delphi survey **Need criteria** *Criteria:* potential value *Final determination method:* open-ended listing—all responses included **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* convenience—Authors identified practitioners in three professions from clinics. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* In Round 1, participating practitioners were asked to list up to five of the most important questions about the management of low back pain in primary care that, if addressed by researchers, would improve their management of low back pain.	**Strategy or method** *Quantitative methods:* modified Delphi survey **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* convenience *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* In Round 2, participants were asked to rate the importance of the collated research priorities on a Likert scale from 0 to 5, with 0 meaning not at all important, and 5 meaning very important. In Round 3, the ten most important priorities, determined by median importance ratings, were returned to the practitioners in order. Where the median importance of the priorities was the same, the mode and then the mean were used to identify the top ten priorities. Each practitioner then ranked the ten priorities from 1 (highest) to 10 (lowest). In Rounds 2 and 3 of the Delphi, participants were asked to rate the importance of the priorities in general, not just the importance of those relevant to their practice.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A
Hibbs et al., 2019				
Date(s): 2015 *Aim:* combination of research needs and priorities *Health condition:* physical health—blood transfusion	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: treatment *Funding organization(s):* government—NHS Blood & Transplant and NIHR *Setting:* other country—UK *Timeline:* N/A *Cost:* not specific, but does state "Given the relatively low cost of research prioritization exercises such as this	**Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	ended listing—questions collated and refined **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers: two information scientists *Identification method:* stakeholder organization—A broad array of groups were approached representing donors, patients, and health professionals. *Level of engagement:* collaboration **Inputs** *Technology or tools:* "Widely disseminated survey" *Other inputs:* literature review, collation and refinement of questions	**Stakeholders** *Involve nonresearchers:* yes—patients, their caregivers, blood donors, and health professionals working with people receiving or donating blood *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations—A broad array of groups were approached, representing donors, patients who had received or were likely to require transfusions, and health professionals involved in blood transfusion and donation. *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* literature review, survey, workshop	**Challenges** Proportionally lower response rate from patients and family members. Only 18 of 41 patient groups were willing or able to disseminate the survey. Data were not collected on the clinical specialty of the clinicians, which would have demonstrated whether a wide mixture of clinicians was represented. It is likely that a different survey dissemination strategy or membership of the final workshop could have produced somewhat different rankings. It is highly likely that at least some of the top priorities would be different in countries with different health systems and disease prevalence. The scope specifically excluded some components and how these should be comparatively prioritized cannot be determined.

Hollis et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February 2016–March 2018 *Aim:* combination of research needs and priorities *Health condition:* psychological health—mental health care *Topic or focus area:* treatment *Funding organization(s):* government—NIHR; foundations, charitable organizations—McPin	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A	**Strategy or method** JLA PSP **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Results might not be generalizable to other countries or subpopulations.

Study Details	Gaps	Needs	Prioritization	Impact
Foundation; MQ: Transforming Mental Health *Setting:* other country—UK *Timeline:* more than 18 months *Cost:* N/A	*Other inputs:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* Established PSP; identified research needs via survey, national workshops, a tweet chat, and existing guidelines and prior JLA PSPs; and consolidated and reduced duplicate or out-of-scope questions	**Inputs** *Technology or tools:* N/A *Other inputs:* Interim prioritization—online survey using optimal card sort method; random sample of 45 research needs presented in random order. Needs ranked on basis of frequency with which they had been chosen. Steering group agreed by consensus to adopt the aggregate needs list. Priority-setting workshop—Before the workshop, participants prioritized the top 26 questions or needs. The workshop used a nominal group technique, with small and large groups. In the first stage, participants split into three groups, and each participant was invited to talk about their highest and lowest priorities, time allowed for discussion. In the second, groups ranked all questions on basis of stage 1 discussion. Rankings from each group were then combined. In the third stage, participants were divided into three groups, presented with combined rankings and given the opportunity to make changes to the order through discussion. In the final stage, the rankings were combined and discussed as group. In the absence of a consensus, agreements were reached by raised-hands voting.	

Howell et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): June, 2008–June 2009 *Aim:* combination of research needs and priorities *Health condition:* physical health—anesthesiology *Topic or focus area:* unclear *Funding organization(s):* other—British Journal of	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A	**Strategy or method** *Qualitative methods:* survey asked respondents to list research questions that needed to be addressed **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—Questions proposed by five people or fewer were excluded from subsequent prioritization	**Strategy or method** *Qualitative methods:* questionnaire for questions and then ranking *Quantitative methods:* questionnaire for questions and then ranking **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—via expert panel	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

158

Study Details	Gaps	Needs	Prioritization	Impact
Anaesthesia *Setting:* other country—UK *Timeline:* 6–12 months *Cost:* N/A	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	exercise. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Survey disseminated to providers and lay representatives asked them to list research questions.	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online questionnaire *Other inputs:* scoring of list of research questions on ten-point scale by providers and lay representatives; identification of priorities by expert panel	
Ingram et al., 2014				
Date(s): November 2012–November 2013 *Aim:* combination of research needs and priorities *Health condition:* physical health—hidradenitis suppurativa (chronic skin condition) *Topic or focus area:* treatment *Funding organization(s):* government—UK Dermatology Clinical Trials Network *Setting:* other country—UK *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* open-ended survey of uncertainties—Steering committee collated and condensed uncertainties in a face-to-face meeting.	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* N/A *Final determination method:* consensus—nominal group technique **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* consensus priority workshop: small groups ranked uncertainties; rankings discussed in plenary session; second ranking; second plenary session	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A
Jones, Lamont, and Haines, 1995				
Date(s): 1993–1994 *Aim:* combination of research needs and priorities *Health condition:* physical health—interface	**Strategy or method** *Literature review* **Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Strategy or method** *Consultation with stakeholders:* Advisory panel consulted stakeholders to identify most pressing problems. **Need criteria** *Criteria:* importance to stakeholders	**Strategy or method** *Quantitative methods:* scoring of master list *Workshop, meeting, conference:* other—evidence received	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A

Study Details	Gaps	Needs	Prioritization	Impact
between primary and secondary care *Topic or focus area:* service delivery and models of care *Funding organization(s):* other—"none" *Setting:* other country— UK *Timeline:* 6–12 months *Cost:* N/A	**Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* other— Advisory panel consulted stakeholders. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Advisory group consulted 242 organizations.	**Prioritization criteria** *Criteria:* importance to stakeholders; other—likely benefit of research to the NHS and patient care; relevance to policy initiatives, such as the Health of the Nation and the patient's charter; burden of disease—costs to the service and to patients; practice variation—areas of large variation being given greater priority. *Final determination method:* vote, rating, rank—scoring, open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* electronic scoring method *Other inputs:* workshop	**Challenges** Coverage of different forms of expertise was not exhaustive, and there was often difficulty in establishing the present state of research knowledge in a given aspect. There were also difficulties with distinguishing between the importance of a topic (in terms of disease and cost burden) and the feasibility of research. Identifying the appropriate balance of skills and experience while keeping the group to a manageable size was challenging. It was not clear how generalizable the findings of one small focus group were.

Kelber et al., 2019

Date(s): 6 months *Aim:* combination of research needs and priorities *Health condition:* psychological health— substance use disorder *Topic or focus area:* prevention, treatment, etiology and risk factors *Funding organization(s):* other—PHCoE *Setting:* U.S. *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Literature review:* Substantiated research gaps by reviewing the recently published literature and in-progress (unpublished) research studies. *Quantitative methods:* High-priority gaps were determined by working group ratings based on feasibility, impact of addressing gap, functional and financial burden of disorder on the Military Health System (MHS), compassion to service members, and political or public concern. *Consensus methods:* The working group then reached full consensus about removing, revising, or retaining each potential gap. *Consultation with stakeholders* *Review in-progress research*	**Strategy or method** *Quantitative methods:* Working group members prioritized the gaps by rating them on a set of metrics using a five-point Likert scale adapted from the pilot project on prioritizing gaps in posttraumatic stress disorder (PTSD) and depression. These metrics included the following: (1) Based on existing scientific evidence, how much does this remain a gap? (2) Based on current research investment, how much does this remain a research gap? (3) How much would addressing this research gap impact the population (includes reach, severity, and alternative treatment options)? (4) What is the likelihood that closing the gap would improve care in the MHS? Gaps were ranked based on their	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The metrics used for prioritizing identified gaps have not been validated for this purpose. The working group members all worked for the same agency, possibly limiting perspective and influencing perceptions.

Study Details	Gaps	Needs	Prioritization	Impact
		Review source materials	mean scores to produce a list of prioritized gaps. After meeting to review published and in-progress research, working group members had approximately two days to rate and rank the gaps.	
		Need criteria		
		Criteria: burden of the disease; importance to stakeholders; potential value; feasibility; other—compassion to service members; political or public concern.	**Prioritization criteria**	
		Final determination method: other— This resulted in a final list of research gaps that had been substantiated as gaps when mapped against both published and in-progress research studies. The working group members had approximately three weeks to devise a search strategy and conduct literature searches for each topic and three weeks per topic to review published and in-progress research.	*Criteria:* potential value; other— (1) Based on existing scientific evidence, how much does this remain a gap? (2) Based on current research investment, how much does this remain a research gap?	
			Final determination method: other— Working group members prioritized the gaps by rating them on a set of metrics using a five-point Likert scale adapted from our pilot project on prioritizing gaps in PTSD and depression. These metrics included the following: (1) Based on existing scientific evidence, how much does this remain a gap? (2) Based on current research investment, how much does this remain a research gap? (3) How much would addressing this research gap impact the population (includes reach, severity, and alternative treatment options)? (4) What is the likelihood that closing the gap would improve care in the MHS? Gaps were ranked based on their mean scores to produce a list of prioritized gaps. After meeting to review published and in-progress research, working group members had approximately two days to rate and rank the gaps.	
		Stakeholders		
		Involve nonresearchers: yes— consulted MHS stakeholders (including senior experts from the services, health affairs, Defense Health Agency, and U.S. Army Medical Research and Materiel Command) for topic identification		
		Composition: clinicians, MHS, researchers		
		Identification method: purposive		
		Level of engagement: collaboration		
		Inputs	**Stakeholders**	
		Technology or tools: N/A	*Involve nonresearchers:* yes	
		Other inputs: 13-member working group	*Composition:* purchasers	
			Identification method: other—N/A	
			Level of engagement: collaboration	
			Inputs	
			Technology or tools: N/A	
			Other inputs: N/A	

161

Study Details	Gaps	Needs	Prioritization	Impact
Kellum et al., 2008				
Date(s): September 2006 *Aim:* combination of research needs and priorities *Health condition:* physical health—acute kidney injury *Topic or focus area:* treatment, diagnosis, assessment, epidemiology *Funding organization(s):* professional association—American Society of Nephrology; industry—Amgen, Eli Lilly and Co., and BioSite; foundations, charitable organizations—National Kidney Foundation *Setting:* other country—Canada *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Consensus methods:* three-step modified Delphi procedure **Need criteria** *Criteria:* unclear *Final determination method:* unclear **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, policymakers, researchers, funders: NIH *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* modified Delphi procedure step 1, literature review	**Strategy or method** *Consensus methods:* modified Delphi process **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—Delphi process **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, policymakers, researchers, funders *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Delphi process: step 2, focus group interactions with presentations to the entire committee; step 3, ranking	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Did not include nonphysician stakeholders (e.g., patients, nurses, and other allied health professionals) or other physician groups (e.g., radiologists, cardiologists, surgeons, hospital administrators and insurance providers).
Kelly et al., 2015				
Date(s): April 2012–June 2013 *Aim:* combination of research needs and priorities *Health condition:* psychological health—dementia *Topic or focus area:* prevention, treatment, symptom management, diagnosis, assessment, epidemiology *Funding organization(s):* government—NIHR; consumer organization—Alzheimer's Society UK	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—all uncertainties listed by survey respondents **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; other—individuals with no direct experience with condition *Identification method:* stakeholder organizations *Level of engagement:* collaboration	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, product makers *Identification method:* stakeholder organizations: Alzheimer's Society identified partner organizations *Level of engagement:* collaboration	**Evaluation** *Method:* unclear—States reported impact but unclear. *Outcome:* unclear **Replication** Yes **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Setting: other country—UK *Timeline:* more than 12 months to 18 months *Cost:* N/A		**Inputs** *Technology or tools:* SurveyMonkey; survey distributed via Alzheimer's Society website, Twitter, Facebook, social media launches *Other inputs:* N/A	**Inputs** *Technology or tools:* online survey *Other inputs:* interim prioritization stage among partner organizations to shorten initial list of questions, rankings from patient and carer representatives and health and social care professionals combined for overall interim ranking	
Khan et al., 2017				
Date(s): March–June 2016 *Aim:* combination of research needs and priorities *Health condition:* physical health—hypertension *Topic or focus area:* treatment *Funding organization(s):* government—Hypertension Canada and CIHR *Setting:* other country—Canada *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—all uncertainties solicited via survey **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—"consensus discussion" **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* workshop	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Respondent questions may not represent all patients with hypertension. Prioritization of research questions is inherently subjective. The survey was web based, and persons without internet access would have been excluded.
Khazai et al., 2019				
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—leprosy *Topic or focus area:* prevention, treatment *Funding organization(s):* foundations, charitable organizations—Leprosy Research Initiative *Setting:* other country—global partnership	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* inquiry panel, focus group discussions, key informant interviews **Need criteria** *Criteria:* importance to stakeholders—list research issues considered most important *Final determination method:* open-ended listing—categorized list of topics identified via qualitative methods **Stakeholders** *Involve nonresearchers:* yes	**Strategy or method** *Quantitative methods:* e-survey with Google forms **Prioritization criteria** *Criteria:* importance to stakeholders—perceived importance *Final determination method:* consensus—consensus interpreted by assessing change in interquartile range between rounds **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** A different classification system for the e-survey as compared to the Delphi panel—which makes it difficult to directly compare the findings. Not all stakeholders, origins, or areas of

163

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: N/A *Cost:* N/A		*Composition:* patients and the public, clinicians, policymakers, researchers—research coordinators of partner organizations *Identification method:* stakeholder organizations—research coordinators of partner organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* qualitative phases—panel of experts, focus groups, and key informant interviews to list research issues considered most important	*Identification method:* snowballing—Snowballing of the invitations was encouraged; stakeholder organizations—Leprosy Mailing List, targeted invitations to organizations. *Level of engagement:* collaboration **Inputs** *Technology or tools:* e-survey with Google forms. Delphi process consisted of three rounds of ranking with questionnaires sent via email. Results of the rankings were imported into Statistical Package for the Social Science and the median (interquartile range [IQR]) and mean ranking (standard deviation) were calculated. *Other inputs:* Survey respondents used a four-point Likert scale to rate perceived importance of research topics and to suggest topics they considered missing from the list; overall importance rates and stratified rates by stakeholder type were calculated for each topic. The Delphi process was used to reach consensus on the most important research topics and to rank these according to perceived priority. Of the three rounds of ranking, the first-round participants ranked 50% of the topics based on perceived priority; second-round participants reconsidered the initial ranking based on overall important rates from e-survey and first-round Delphi process and were given opportunity to explain their ranking; and third-round participants reconsidered ranking based on the results of the second round, including explanations. Research topics were ranked according to the median of the assigned scores. After the third round, consensus was interpreted by assessing the change in IQR between rounds. Consensus was considered increased if the IQR of a topic was	expertise are equally represented. Social scientists may have been underrepresented.

164

Study Details	Gaps	Needs	Prioritization	Impact
			reduced in round three as compared to round one and two. No statistical testing was performed.	

Knight et al., 2016				
Date(s): January 2014–February 2016	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*JLA PSP*	*JLA*	*Method:* No: "not formally assessed"
	Gap criteria	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Health condition: physical health—kidney transplant and living donor	*Criteria:* N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
	Final determination method: N/A	*Final determination method:* open-ended listing—all uncertainties	*Final determination method:* vote, rating, rank—rank, discussion, voting	N/A
Topic or focus area: treatment	**Stakeholders**	**Stakeholders**	**Stakeholders**	**Challenges**
Funding organization(s): foundations, charitable organizations—Leprosy Research Initiative	*Involve nonresearchers:* N/A	*Involve nonresearchers:* yes	*Involve nonresearchers:* yes	May under-represent certain groups.
	Composition: N/A	*Composition:* patients and the public, clinicians	*Composition:* patients and the public, clinicians	Small number of participants in the final workshop.
	Identification method: N/A	*Identification method:* stakeholder organizations	*Identification method:* stakeholder organizations: promoted via the steering group, partner organizations, and other interested individuals	
Setting: other country—global partnership	*Level of engagement:* N/A	*Level of engagement:* collaboration	*Level of engagement:* collaboration	
Timeline: more than 18 months	**Inputs**	**Inputs**	**Inputs**	
	Technology or tools: N/A	*Technology or tools:* N/A	*Technology or tools:* online survey	
Cost: N/A	*Other inputs:* N/A	*Other inputs:* N/A	*Other inputs:* workshop	

Kraiss et al., 2013				
Date(s): Spring–October 2011	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
	N/A	*Qualitative methods:* Survey asking for list if clinical issues need better evidence	*Quantitative methods*	*Method:* N/A
Aim: combination of research needs and priorities	**Gap criteria**		*Workshop, meeting, conference*	*Outcome:* N/A
	Criteria: N/A		*Researcher-only topic identification*	**Replication**
Health condition: physical health—vascular surgery	*Final determination method:* N/A	**Need criteria**	**Prioritization criteria**	N/A
	Stakeholders	*Criteria:* importance to stakeholders; potential value—public health and economic impact; feasibility, other—clinical need	*Criteria:* importance to stakeholders	**Challenges**
Topic or focus area: treatment	*Involve nonresearchers:* N/A		*Final determination method:* vote, rating, rank—improved nominal group technique with final voting	None
Funding organization(s): professional association—Society for Vascular Surgery (SVS)	*Composition:* N/A	*Final determination method:* open-ended listing		
	Identification method: N/A		**Stakeholders**	
	Level of engagement: N/A	**Stakeholders**	*Involve nonresearchers:* yes	
	Inputs	*Involve nonresearchers:* yes	*Composition:* clinicians, researchers	
Setting: U.S.	*Technology or tools:* N/A	*Composition:* clinicians, researchers	*Identification method:* stakeholder organizations: SVS	
Timeline: 6–12 months	*Other inputs:* N/A	*Identification method:* stakeholder organizations—SVS	*Level of engagement:* collaboration	
Cost: N/A		*Level of engagement:* collaboration	**Inputs**	
			Technology or tools: N/A	
			Other inputs: two-day SVS clinical	

Study Details	Gaps	Needs	Prioritization	Impact
		Inputs *Technology or tools:* *Other inputs:* survey (list of research questions)	research priority meeting presentations; small-group ratings; plenary session that used variation of improved nominal group technique	

Lavigne et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February-December 2014 *Aim:* combination of research needs and priorities *Health condition:* physical health—pediatric preventive care *Topic or focus area:* prevention *Funding organization(s):* unclear *Setting:* other country—Canada *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—uncertainties listed in survey **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* N/A	**Strategy or method** *JLA:* informed by James Lind methodology **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—The mean ranking for each question was again calculated across the four small groups, and a final session that involved all participants was used to reach consensus on the ten most important unanswered research questions. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations—TARGet Kids! research network, as well as from pediatricians and family physicians through TARGet Kids! and the Ontario Medical Association *Level of engagement:* collaboration **Inputs** *Technology or tools:* online questionnaire *Other inputs:* workshop	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Respondents were primarily well-educated mothers living in higher income households. Future research may seek to give a voice to older children and teenagers. Some parents felt that the extent of their knowledge may not have allowed them to make fully informed decisions on the relative importance of unanswered questions during the workshop.

Lawler et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2015–2016 *Aim:* combination of research needs and priorities *Health condition:* physical health—colorectal cancer *Topic or focus area:* basic science, prevention, treatment, symptom	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A	**Strategy or method** *Workshop, meeting, conference:* discussions, other—Working groups drafted papers which were evaluated by patient panel. **Need criteria** *Criteria:* N/A *Final determination method:* other—discussion	**Strategy or method** *Qualitative methods:* premeeting questionnaires, *Workshop, meeting, conference:* meeting, discussion **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranked by patients and	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
management, diagnosis, assessment, epidemiology, and etiology and risk factors *Funding organization(s):* foundations, charitable organizations—Bowel Cancer UK, the Norman Foster Foundation and the Tom Simms Memorial Fund at Queen's University Belfast *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	*Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations: UK charity Bowel Cancer UK and other groups "drew together" stakeholders *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* workshop discussion, working group reports, patient panel evaluation, further reports, steering group meeting, manuscript	steering group meeting **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations: Bowel Cancer UK, helped by other groups *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* ranked by patients and steering group meeting	

Layton et al., 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): January 2013–March 2014 *Aim:* combination of research needs and priorities *Health condition:* physical health—acne *Topic or focus area:* treatment *Funding organization(s):* professional association—UK Dermatology Clinical Trials Society for Academic Primary Care; government—UK Dermatology Clinical Trials Network *Setting:* other country—UK *Timeline:* more than 12 months to 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—popularity of uncertainty **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* convenience—social media, stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* survey via SurveyMonkey, Twitter account to publicize surveys, patient survey lottery incentive *Other inputs:* steering group	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—nominal group technique. In the first session, three groups consisting of equal numbers of patients, professionals, and nonparticipatory observers, each with an independent moderator, were asked to prioritize all 18 uncertainties using a nominal group technique. The results were collated and discussed in one combined afternoon session, moderated by the chairman of the steering group. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* convenience: social media, stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Difficult to get enough respondents. Fewer males.

Study Details	Gaps	Needs	Prioritization	Impact
			Other inputs: priority-setting workshop	

Lechelt et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): January 2016 to October 2016	**Strategy or method** N/A	**Strategy or method** *JLA PSP*	**Strategy or method** *JLA*	**Evaluation** *Method:* N/A
Aim: combination of research needs and priorities	**Gap criteria** *Criteria:* N/A	**Need criteria** *Criteria:* importance to stakeholders	**Prioritization criteria** *Criteria:* importance to stakeholders	*Outcome:* N/A **Replication**
Health condition: physical health—head and neck cancer	*Final determination method:* N/A **Stakeholders**	*Final determination method:* open-ended listing, other—thematic coding used to categorize questions and	*Final determination method:* vote, rating, rank—voting **Stakeholders**	Yes **Challenges**
Topic or focus area: prevention, treatment, symptom management, diagnosis, assessment, epidemiology	*Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	literature review **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians	*Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* snowballing, convenience, other—random	N/A
Funding organization(s): foundations, charitable organizations—Albert Cancer Foundation provided research leadership and in-kind support; other—Institute for Reconstructive Sciences in Medicine provided research leadership and in-kind support	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Identification method:* snowballing, convenience, other—random *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey	*Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* interim prioritization— The online survey was used to rank order top ten of 77 uncertainties;	
Setting: other country—Canada *Timeline:* 6–12 months *Cost:* N/A		*Other inputs:* Steering committee first reached consensus on the desired scope and inclusion and exclusion criteria for the project regarding respondent groups (included adult Alberta patients, caregivers, family members, and clinicians); question categories (broadened JLA's typical treatment domain to include prevention, diagnosis, and quality of life).	because of a cluster of closely ranked uncertainties between 21 and 34, a list of 34 uncertainties was recirculated to the steering committee via online survey for second round of ranking. Final priority setting: initial large group meeting; small-group breakout sessions to rank and reach consensus regarding priority order of uncertainties; second large group meeting discuss small group rankings and achieve consensus on new rank order of uncertainties used as a starting point for second breakout session; final large group meeting to discuss and vote to achieve consensus on final rank order of uncertainties	
		Online survey elicited open-ended suggestions for research questions. Invitation to participate and link to survey were posted on public website of Alberta Cancer Foundation. Recruitment posters were placed in cancer treatment facilities; email notices were distributed through patient social networks and email distribution networks of selected professional associations and colleges; and notices were placed in health profession e-newsletters and websites. Paper survey was sent via post mail to stratified random sample		

168

Study Details	Gaps	Needs	Prioritization	Impact
		of patients from Alberta's Cancer Registry. Clinician-patient dyads, supported by the data analyst, processed 799 uncertainties using thematic coding. After removing questions answered in the literature, 72 questions remained and five new uncertainties from the literature review were added.		

Lindson et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February–June 2016	**Strategy or method** N/A	**Strategy or method** *JLA PSP*	**Strategy or method** *JLA:* "inspired by the approach of the James Lind Alliance"	**Evaluation** *Method:* N/A
Aim: combination of research needs and priorities	**Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing	**Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank	*Outcome:* N/A **Replication** Yes
Health condition: physical health—tobacco	**Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public—smokers and exsmokers; clinicians; policymakers—health care commissioners; researchers; funders—research funders; other—public health organizations *Identification method:* purposive—Iranian health research policymakers and funders *Level of engagement:* collaboration	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; policymakers; researchers; funders; other—public health organizations *Identification method:* purposive—Iranian health research policymakers and funders *Level of engagement:* collaboration	**Challenges** Just over one-half of the respondents were based in the United Kingdom. Categorization was performed by three members of the research team. Some parts of the audio recordings were obscured by background room noise. Other ranking methods may have yielded different results. Cannot give a completely accurate account of how many workshop delegates completed the voting exercise.
Topic or focus area: prevention, treatment	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Inputs** *Technology or tools:* Online survey disseminated via a web link. *Other inputs:* open ended—Unanswered research questions were identified and classified into 15 research categories.	**Inputs** *Technology or tools:* N/A *Other inputs:* consensus workshop	
Funding organization(s): government—NIHR *Setting:* other country—UK *Timeline:* less than 6 months *Cost:* N/A				

Lloyd and White, 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2007 to 2009	**Strategy or method** N/A	**Strategy or method** *JLA PSP*	**Strategy or method** *JLA*	**Evaluation** *Method:* N/A
Aim: combination of research needs and priorities	**Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—11 partners ranked top ten uncertainties.	**Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus	*Outcome:* N/A **Replication** Yes
Health condition: psychological health—schizophrenia				

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: treatment	**Stakeholders**	**Stakeholders**	**Stakeholders**	**Challenges**
Funding organization(s): government—UK MRC and NIHR	*Involve nonresearchers:* N/A	*Involve nonresearchers:* yes	*Involve nonresearchers:* yes	N/A
Setting: other country—UK	*Composition:* N/A	*Composition:* patients and the public, clinicians, researchers, funders	*Composition:* patients and the public, clinicians, researchers	
Timeline: more than 18 months	*Identification method:* N/A	*Identification method:* N/A	*Identification method:* N/A	
Cost: N/A	*Level of engagement:* N/A	*Level of engagement:* collaboration	*Level of engagement:* collaboration	
	Inputs	**Inputs**	**Inputs**	
	Technology or tools: N/A	*Technology or tools:* web- and paper-based questionnaires	*Technology or tools:* N/A	
	Other inputs: N/A	*Other inputs:* N/A	*Other inputs:* priority-setting workshop—small-group discussion, nominal group technique to reach moderated consensus on a top ten	

Lockey et al., 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*Qualitative methods:* preconference—This preliminary list was translated into a series of targeted surveys relevant to the membership of each professional and agency sponsor.	*Workshop, meeting, conference*: Round 3—Abstract presenters and invited speakers were asked to note gaps or priorities within their presentations; during conference and plenary panel delegates asked to provide input on gaps/priorities.	*Method:* N/A
Health condition: physical health—isocyanates effect on human health	**Gap criteria**			*Outcome:* N/A
Topic or focus area: etiology and risk factors	*Criteria:* N/A		*Other:*	**Replication**
Funding organization(s): government—CIHR	*Final determination method:* N/A	*Review source materials:* 2001 international consensus report; a summary of knowledge gaps and research priorities arising from a multistakeholder meeting	Round 4—After the conference, the revised summary of knowledge gaps and research priorities was circulated to the full scientific committee for their review and input.	N/A
Setting: U.S.	**Stakeholders**			**Challenges**
Timeline: N/A	*Involve nonresearchers:* N/A	**Need criteria**	Round 5—The updated draft of the summary of knowledge gaps and research priorities was then circulated to all delegates for their final review and input. Section chairs took this feedback under advisement and updated the list of knowledge gaps and research priorities.	N/A
Cost: N/A	*Composition:* N/A	*Criteria:* potential value		
	Identification method: N/A	*Final determination method:* consensus		
	Level of engagement: N/A	**Stakeholders**	**Prioritization criteria**	
	Inputs	*Involve nonresearchers:* yes	*Criteria:* potential value	
	Technology or tools: N/A	*Composition:* patients and the public, clinicians, policymakers, product makers, researchers	*Final determination method:* consensus	
	Other inputs: N/A	*Identification method:* unclear—only states "academic, government, industry, professional organizations and consumer and worker health representatives"	**Stakeholders**	
		Level of engagement: coproduction	*Involve nonresearchers:* yes	
		Inputs	*Composition:* patients and the public, clinicians, policymakers, product	
		Technology or tools: survey		
		Other inputs: Section chairs reviewed documents and prior meeting report,		

Study Details	Gaps	Needs	Prioritization	Impact
		abstract, and poster presentations and circulated the draft for input.	makers *Identification method:* unclear: only states "academic, government, industry, professional organizations and consumer and worker health representatives" *Level of engagement:* coproduction **Inputs** *Technology or tools:* survey *Other inputs:* Section chairs reviewed documents and prior meeting report, abstract and poster presentations and circulated the draft for input	

Lomer et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): November 2013–May 2014 *Aim:* combination of research needs and priorities *Health condition:* physical health—inflammatory bowel disease *Topic or focus area:* treatment *Funding organization(s):* professional association—British Society of Gastroenterology; foundations, charitable organizations—Crohn's and Colitis UK *Setting:* other country—UK *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—All uncertainties elicited via survey. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* SurveyMonkey *Other inputs:* N/A	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—The whole group ranked the overall set of uncertainties through active debate until consensus was reached regarding the uncertainties to be removed and the order of the final ten research priorities. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public—patients; clinicians; funders—UK inflammatory bowel disease charity organization, Crohn's and Colitis UK; other—JLA administrator *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* questionnaire *Other inputs:* workshop—The whole group ranked the overall set of uncertainties through active debate until consensus was reached regarding the uncertainties to be removed and the order of the final ten research priorities.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Lophatananon et al., 2011				
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*JLA PSP*	*JLA*	*Method:* N/A
Health condition: physical health—prostate cancer	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: treatment	*Criteria:* N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
Funding organization(s): government—JLA is an independent organization funded by the NIHR and MRC UK	*Final determination method:* N/A	*Final determination method:* open-ended listing: All uncertainties listed in survey.	*Final determination method:* vote, rating, rank—ranking and discussion	Yes
	Stakeholders	**Stakeholders**	**Stakeholders**	**Challenges**
	Involve nonresearchers: N/A	*Involve nonresearchers:* yes	*Involve nonresearchers:* yes	Extrapolation of the data; the survey was collected from a limited study population.
Setting: other country—UK	*Composition:* N/A	*Composition:* patients and the public, clinicians	*Composition:* patients and the public, clinicians	Limited numbers present in the group discussion stage.
Timeline: N/A	*Identification method:* N/A	*Identification method:* stakeholder organizations	*Identification method:* stakeholder organizations—The steering group consisted of members of the JLA, Prostate Action, the PCSF and the Prostate Cancer Charity (PCC). The steering group worked together to approach patients with prostate cancer and clinicians to become "affiliates" and to form a PSP	Uneven number of patients and clinicians could have produced biased results.
Cost: N/A	*Level of engagement:* N/A	*Level of engagement:* collaboration		
	Inputs	**Inputs**		
	Technology or tools: N/A	*Technology or tools:* web survey		
	Other inputs: N/A	*Other inputs:* N/A	*Level of engagement:* collaboration	
			Inputs	
			Technology or tools: online "harvesting form"	
			Other inputs: workshop	
Lough et al., 2018				
Date(s): May 2016 to September 2017	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*JLA PSP*	*JLA*	*Method:* N/A
Health condition: physical health—pessary use for the management of prolapse	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Criteria: N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
	Final determination method: N/A	*Final determination method:* open-ended listing—questions reviewed and categorized	*Final determination method:* consensus—nominal group technique	Yes
	Stakeholders			**Challenges**
Topic or focus area: treatment	*Involve nonresearchers:* N/A	**Stakeholders**	**Stakeholders**	The use of an online survey may have introduced a bias in favour of those women who use the internet and social media.
Funding organization(s): professional association: UK Continence Society; foundations, charitable organizations—Pelvic Obstetric and	*Composition:* N/A	*Involve nonresearchers:* yes	*Involve nonresearchers:* yes	Time and cost constraints reduced the number of clinical sites.
	Identification method: N/A	*Composition:* patients and the public, clinicians	*Composition:* patients and the public, clinicians	There may be underrepresentation in
	Level of engagement: N/A	*Identification method:* stakeholder organizations—promoted on social media to relevant organizations, professional bodies, health-related websites and forums	*Identification method:* stakeholder organizations	
	Inputs		*Level of engagement:* collaboration	
	Technology or tools: N/A		**Inputs**	
	Other inputs: N/A		*Technology or tools:* online survey for interim prioritization	

Study Details	Gaps	Needs	Prioritization	Impact
Gynecological Physiotherapy group of the Chartered Society of Physiotherapy *Setting:* other country—UK *Timeline:* more than 12 months to 18 months *Cost:* N/A		*Level of engagement:* collaboration **Inputs** *Technology or tools:* The survey was launched online and promoted on social media to relevant organizations, professional bodies, health-related websites, and forums for women with prolapse. *Other inputs:* Paper copies of the survey were distributed to four urogynaecology clinics in the UK for patients and health care professionals to complete. Relevant conferences and professional meetings were also targeted and attendees asked to access the survey online.	*Other inputs:* prioritizing questions—The number of times each question occurred in respondents' top ten was counted. The questions were then ranked on the basis of that count to show the order of priority of the 66 questions and The Steering Group then agreed the top 25 questions to go forward to the final workshop. Final consensus workshop day—In advance of the final workshop the participants were sent the top 25 questions from the prioritizing survey with no indication of the priority order, and asked to consider their top and bottom three questions for discussion on the day. JLA has adopted a modified nominal group technique to achieve consensus in the final workshops.	ethnically diverse sectors.

Macbeth et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): September–November 2015 *Aim:* combination of research needs and priorities *Health condition:* physical health—alopecia areata *Topic or focus area:* prevention, treatment, diagnosis, assessment, epidemiology *Funding organization(s):* consumer organization—Alopecia UK; British Hair and Nail Society; and the European Hair Research Society *Setting:* other country—UK *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—all uncertainties elicited via survey **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* SurveyMonkey *Other inputs:* N/A	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—ranking **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; funders—British Hair and Nail Society and the European Hair Research Society other—JLA representative *Identification method:* stakeholder organizations—Key stakeholders were identified through a process of consultation and peer knowledge, building on steering group members' networks and existing JLA's affiliates. *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* workshop	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Some inconsistency occurred in taxonomy allocation to categorize questions. Some larger organizations were reluctant to commit to partnership but agreed to advertise the PSP to their members, while other groups refused to engage at all.

Study Details	Gaps	Needs	Prioritization	Impact
Macbeth et al., 2018				
Date(s): March 2014–November 2015	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*JLA PSP*	*JLA*	*Method:* N/A
Health condition: physical health—hair loss	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: prevention, treatment, diagnosis, assessment, epidemiology	*Criteria:* N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
	Final determination method: N/A	*Final determination method:* other	*Final determination method:* consensus	Yes
	Stakeholders	**Stakeholders**		**Challenges**
Funding organization(s): foundations, charitable organizations—Alopecia UK, hair-loss charity	*Involve nonresearchers:* N/A	*Involve nonresearchers:* yes	**Stakeholders**	Data handling.
	Composition: N/A	*Composition:* patients and the public, clinicians, researchers	*Involve nonresearchers:* yes	Large number of uncertainties originally submitted (2,747 questions).
Setting: other country—UK	*Identification method:* N/A	*Identification method:* convenience—consultation, peer knowledge, stakeholder organizations: steering group networks, JLA affiliates	*Composition:* patients and the public, clinicians, researchers	Inconsistency in taxonomy allocation to categorize questions.
Timeline: more than 18 months	*Level of engagement:* N/A		*Identification method:* convenience, stakeholder organizations	Difficulty engaging key stakeholders. especially larger organizations.
Cost: N/A	**Inputs**	*Level of engagement:* collaboration	*Level of engagement:* collaboration	
	Technology or tools: N/A	**Inputs**	**Inputs**	
	Other inputs: N/A	*Technology or tools:* online and paper surveys; advertisements via social media	*Technology or tools:* N/A	
		Other inputs: Survey opened to all UK residents and invited them to submit uncertainties; interim list of research needs created by applying criteria (e.g., most frequently asked question, need identified by both providers and patients)	*Other inputs:* nominal group technique, consensus achieved through series of ranking and plenary sessions.	
		Online ranking survey completed by previous participants who were asked to choose up to ten uncertainties. Uncertainties were ranked by number of votes and also listed separately by different stakeholders.		
MacFarlane et al., 2017				
Date(s): May 2013	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*Other:* World Café	*Other:* World Café	*Method:* N/A
Health condition: physical health—diabetes	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: treatment	*Criteria:* N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
	Final determination method: N/A	*Final determination method:* open-ended listing—response to questions	*Final determination method:* vote, rating, rank—All participants used stickers to indicate which issues they thought were priorities for research.	Yes
Funding organization(s): government—Patient-	**Stakeholders**	**Stakeholders**		**Challenges**
	Involve nonresearchers: N/A	*Involve nonresearchers:* yes	**Stakeholders**	Did not identify a priori parameters for the conduct or comparative analysis of the cafés reported.
	Composition: N/A	*Composition:* patients and the public	*Involve nonresearchers:* yes	
	Identification method: N/A			

Study Details	Gaps	Needs	Prioritization	Impact
Centered Outcomes Research Institute *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Identification method:* snowballing, stakeholder organizations, purposive *Level of engagement:* collaboration **Inputs** *Technology or tools:* NVivo software for thematic analysis *Other inputs:* Café host to facilitate the event; table discussions	*Composition:* patients and the public *Identification method:* snowballing—The principles of purposeful and snowball sampling were followed. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* After table discussions and large group discussion, participants are provided with sticky, colored paper dots to cast votes.	Analysis is based on observations of the World Cafés.

Mador et al., 2016

Date(s): 2012 *Aim:* combination of research needs and priorities *Health condition:* physical health—public health *Topic or focus area:* other—local public health sector research priorities *Funding organization(s):* not explicitly reported *Setting:* other country—Canada *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Quantitative methods:* survey via an email *Other:* workshop—series of talks, breakout sessions, and presentations followed by discussion and postmeeting email discussions **Prioritization criteria** First phase involved public health units identifying subject areas most closely aligned with their organization's needs and priorities **Need criteria** *Criteria:* alignment with organizations mission *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes—public health units *Composition:* clinicians *Identification method:* stakeholder organizations: public health unit organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* e-survey *Other inputs:* N/A	**Strategy or method** *Literature review* *Quantitative methods* *Workshop, meeting, conference:* The second phase was an all-day workshop involving representatives from each of the 36 public health units. Representatives worked in small groups aligned with each of the seven prioritized subject areas *Other:* nine common themes of good practice checklist **Prioritization criteria** *Criteria:* importance to stakeholders; alignment with organization's mission—misalignment; potential value; feasibility—too big; other—duplications, already done, out-of-scope, too early, balance (address priorities of health units from different regions and various sizes) *Final determination method:* vote, rating, rank—The research question with the most votes moved forward to be collaboratively developed into Locally Driven Collaborative Projects. **Stakeholders** *Involve nonresearchers:* yes—public health unit staff *Composition:* clinicians, purchasers: funders *Identification method:* stakeholder	**Evaluation** *Method:* yes—evaluation not on impact but on context, inclusiveness, information gathering, planning for implementation, criteria, methods for deciding priorities, use of a comprehensive approach. *Outcome:* unclear **Replication** N/A **Challenges** Checklist for this process has not been validated. Evaluation was informed, in part, by a secondary analysis of information sources that were not collected for the purposes of this evaluation.

Study Details	Gaps	Needs	Prioritization	Impact
			organizations—public health unit staff *Level of engagement:* collaboration **Inputs** *Technology or tools:* survey, checklist *Other inputs:* workshop	

Manns et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): July 2012–June 2013 *Aim:* combination of research needs and priorities *Health condition:* physical health—kidney failure & dialysis *Topic or focus area:* treatment, diagnosis, assessment, epidemiology *Funding organization(s):* health care delivery organization, government—CIHR; foundations, charitable organizations—Kidney Foundation of Canada *Setting:* other country—Canada *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers, funders *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey and paper-based surveys in 13 centers and clinics *Other inputs:* The uncertainties identified by survey respondents and from guidelines were combined, and those deemed not relevant were eliminated. Over the course of four steering group conference calls, the relative importance and wording of the uncertainties that were most highly ranked were discussed. Overlapping uncertainties were grouped further. Excluded uncertainties had been answered by recent high-quality research. The end product was a short list of 30 uncertainties to be considered at the workshop.	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* Consensus—consensus approach with voting when needed **Stakeholders** *Involve nonresearchers:* yes— patients, providers, caregivers *Composition:* patients and the public, clinicians, funders *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey, paper-based survey *Other inputs:* steering group refinement and one-day workshop	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Subjective viewpoints. May not be representative of all patient groups. Only 317 respondents.

Mansoori et al., 2018

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): July–December 2017 *Aim:* combination of research needs and	**Strategy or method** N/A	**Strategy or method** *CHNRI*	**Strategy or method** *CHNRI* **Prioritization criteria** *Criteria:* potential value—"impact on	**Evaluation** *Method:* N/A *Outcome:* N/A

Study Details	Gaps	Needs	Prioritization	Impact
priorities	**Gap criteria**	**Need criteria**	health," "impact on economy"; addresses inequities; feasibility, other	**Replication**
Health condition: physical health—not specified	*Criteria:* N/A	*Criteria:* importance to stakeholders	*Final determination method:* vote, rating, rank—ranking	Yes
Topic or focus area: other—national health research priorities	*Final determination method:* N/A	*Final determination method:* open-ended listing—all research questions listed	**Stakeholders**	**Challenges**
Funding organization(s): other—funded by author's PhD grant through Chancellor's Fellowship from the College of Medicine and Veterinary Medicine at the University of Edinburgh	**Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, product makers, funders, other *Identification method:* snowballing, Purposive: experts	*Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, product makers *Identification method:* snowballing—purposive, experts *Level of engagement:* collaboration	Limited group of involved experts. Some valid research questions not proposed. More than 70% of the identified experts had a background in medical sciences.
Setting: other country—Iran	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Level of engagement:* collaboration	**Inputs** *Technology or tools:* Telegram application to solicit questions and rank	Some of the initially proposed descriptive research questions were merged with interventional ones that addressed the same health problem, and
Timeline: 6–12 months		**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Other inputs:* N/A	this could have led to biased responses toward one part of the question.
Cost: N/A				Research questions had some degree of overlap. Research questions translated between Persian and English.

Mollan et al., 2019

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February 2017–June 2018	**Strategy or method** N/A	**Strategy or method** *JLA PSP*	**Strategy or method** *JLA*	**Evaluation** *Method:* N/A
Aim: combination of research needs and priorities	**Gap criteria** *Criteria:* N/A	**Need criteria** *Criteria:* importance to stakeholders	**Prioritization criteria** *Criteria:* importance to stakeholders	*Outcome:* N/A **Replication**
Health condition: physical health—idiopathic intracranial hypertension	*Final determination method:* N/A **Stakeholders**	*Final determination method:* open-ended listing—refining of uncertainties	*Final determination method:* consensus—consensus workshop	Yes **Challenges**
Topic or focus area: treatment	*Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public,	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public,	Using online surveys may mean not all able to participate.
Funding organization(s): foundations, charitable organizations—Idiopathic Intracranial Hypertension UK	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	clinicians *Identification method:* stakeholder organizations—first survey was advertised by partners, Idiopathic Intracranial Hypertension UK, and steering group members	clinicians *Identification method:* stakeholder organizations—surveys disseminated on charity website and via social media	Possibly all the research questions gathered are not exhaustive.
Setting: other country—UK		*Level of engagement:* collaboration	*Level of engagement:* collaboration	

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: more than 12 months to 18 months *Cost:* N/A		**Inputs** *Technology or tools:* N/A *Other inputs:* initiation of PSP, consultation (protocol design by steering group and pretesting of initial survey), identification of uncertainties (survey with free text response), refining of uncertainties (classification of survey submissions and elucidation of questions by steering group)	**Inputs** *Technology or tools:* N/A *Other inputs:* Interim survey had respondents rank their top ten research needs; total scores for patients, friends, and carers and providers were calculated separately to ensure equal weighting. Final consensus priority workshop.	

Morris et al., 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—neurodisability in children and young people *Topic or focus area:* treatment *Funding organization(s):* professional association—Paul Polani Fund, Royal College of Paediatrics and Child Health *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—not really consensus, just collated and checked against literature **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* coproduction—authors from National Network of Parent Carer Forums **Inputs** *Technology or tools:* online survey *Other inputs:* steering group review—JLA advisor supported group throughout; travel expenses were reimbursed and time of nonsalaried members acknowledged through stipend; printed copies of survey made available at several events for parent carers and young people with freepost return envelope	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders, potential value *Final determination method:* vote, rating, rank—If broad agreement was not apparent, a vote was used. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public; clinicians; researchers—researcher part of steering committee *Identification method:* stakeholder organizations—charities and professional societies *Level of engagement:* coproduction—The Steering Group developed a dissemination strategy in advance of the final priority-setting workshop; the plan included using a variety of media to reach different audiences to share the priorities with research funding agencies. **Inputs** *Technology or tools:* online survey *Other inputs:* steering committee, literature review, consensus meeting	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Noncategorical approach will exclude specific issues for children and young people with a particular diagnosis or syndrome. Cannot identify all potential research questions. Difficulty engaging young people in the survey. Many issues raised could not be framed as research questions.

Study Details	Gaps	Needs	Prioritization	Impact
Morris et al., 2018				
Date(s): June 2016–March 2017 *Aim:* combination of research needs and priorities *Health condition:* Physical health *Topic or focus area:* treatment *Funding organization(s):* government—NIHR *Setting:* other country—UK *Timeline:* more than 18 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders, N/A *Final determination method:* open-ended listing—all uncertainties solicited via survey **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* other—A website was created to advertise the partnership and the online survey. *Level of engagement:* collaboration **Inputs** *Technology or tools:* e-survey *Other inputs:* N/A	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—discussed and ranked **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* other—A website was created to advertise the partnership and the online survey. *Level of engagement:* collaboration **Inputs** *Technology or tools:* online questionnaire, online survey *Other inputs:* meetings	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Imbalance of submissions between patients and health care professionals. Limited involvement by some health care professional groups. Fewer questions submitted by lesbian, gay, bisexual, transgender (LGBT) community. Wide breadth of questions that were submitted. The majority of patients who completed the first survey were white (92%) and over 55 (58%). Little engagement from younger adults, younger parents, members of black and minority ethnic groups.
Murphy et al., 2008				
Date(s): September 2005 *Aim:* combination of research needs and priorities *Health condition:* physical health—osteoporosis *Topic or focus area:* treatment *Funding organization(s):* professional association: Arthrocare, Cardinal Health, Kyphon, and Terumo Interventional Systems *Setting:* U.S.	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Consensus methods:* CAIRR research consensus panel process: **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—The panelists' comments were compiled into a list of proposed skeletal intervention research topics. **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians; policymakers—moderated roundtable panel discussion with comments from governmental representatives; product	**Strategy or method** *Quantitative methods* *Workshop, meeting, conference* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rank categories from 1 (highest priority) to 19 (lowest priority) **Stakeholders** *Involve nonresearchers:* yes *Composition:* policymakers—government representatives; product makers—industry, researchers *Identification method:* purposive—CAIRR and CIRSE foundation created	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: less than 6 months *Cost:* N/A		makers—moderated roundtable panel discussion with comments from industry *Identification method:* purposive—CAIRR and the CIRSE foundation created list of leading scientists for the ten-member consensus panel. *Level of engagement:* collaboration. **Inputs** *Technology or tools:* N/A *Other inputs:* Multidisciplinary meeting of experts structured per CAIRR research consensus pane process: (1) introductory presentations, (2) moderated roundtable panel discussion with comments from industry and governmental representatives, (3) research topic prioritization, and (4) preliminary clinical research protocol development.	list of leading scientists for the ten-member consensus panel *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Panelists and industry representatives scored list of research topics. Following discussion and recategorization of identified research areas, consensus on new categorization was reached through a modified Delphi technique. Ranked revised research topics from 1 (highest priority) to 19 (lowest priority).	

Narahari et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—lymphedema *Topic or focus area:* treatment *Funding organization(s):* government—Department of Health Research, Government of India *Setting:* other country—India *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—Experts ranked list of research needs from 1 to 100. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature search—Stakeholders submitted research needs and questions; experts ranked list of needs; and providers consulted patients about priorities during free lymphedema medical camp.	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* final prioritization workshop—presentation and discussion on shortlisted ten research priorities, then a vote.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Low response from surgeons.

Study Details	Gaps	Needs	Prioritization	Impact
Nelson et al., 2018				
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	Other—modified Delphi/World Café	Other—modified Delphi/World Café process, concept mapping	*Method:* N/A
Health condition: physical health—stroke	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Criteria: importance to stakeholders	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	**Replication**
Topic or focus area: treatment	*Final determination method:* N/A	*Final determination method:* consensus—Delphi	*Final determination method:* Delphi	Yes
Funding organization(s): government—CIHR	**Stakeholders**	**Stakeholders**	**Stakeholders**	**Challenges**
	Involve nonresearchers: N/A	*Involve nonresearchers:* yes	*Involve nonresearchers:* yes	"Nontraditional rehabilitation partners, including community agencies, nonregulated health professionals and representatives of the private sector were excluded.
Setting: other country—Canada	*Composition:* N/A	*Composition:* patients and the public, clinicians, purchasers, payers, policymakers	*Composition:* clinicians, purchasers, payers, policymakers, and product makers	
Timeline: less than 6 months	*Identification method:* N/A	*Identification method:* purposive—based on research funding, clinical experience, and/or publications and on reputation within Canadian stroke sector	*Identification method:* purposive—"invited based on research funding, clinical experience, and/or publications in stroke care, rehabilitation, complexity, and multimorbidity, as well as on reputation within the Canadian stroke sector. Individuals responsible for the design and delivery of stroke rehabilitation services (e.g., best-practice conveners, clinical administration, policymakers) were invited, as well as individuals recommended by the project team and/or individuals who received an invitation to the think tank."	Patients and caregivers were not included.
Cost: N/A	*Level of engagement:* N/A			Consideration for these issues in specific practice settings or contexts (e.g., urban versus rural) was not explicitly addressed.
	Inputs	*Level of engagement:* collaboration		An associated implementation plan for either the agenda or the research network was not developed during the think tank."
	Technology or tools: N/A	**Inputs**		
	Other inputs: N/A	*Technology or tools:* N/A		
		Other inputs: N/A	*Level of engagement:* collaboration	
			Inputs	
			Technology or tools: N/A	
			Other inputs: final prioritization workshop—presentation and discussion on shortlisted ten research priorities, then a vote.	
Otto et al., 2018				
Date(s): 2016	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*Literature review:* Reviewed current scientific literature.	*Quantitative methods:* Panel developed a set of metrics to prioritize the research gaps based on a Likert scale assessment.	*Method:* N/A
Health condition: psychological health—PTSD, depression in military	**Gap criteria**	*Quantitative methods:* At least 80% (five of six) of the panel members had to vote "yes" to each potential gap to retain it.	**Prioritization criteria**	*Outcome:* mentions high potential impact but no specific method
	Criteria: N/A		*Criteria:* potential value—impact on the military community; other—potential improvement of care in the	**Replication**
Topic or focus area:	*Final determination method:* N/A	*Consensus methods:* Through discussion and professional		N/A
	Stakeholders			
	Involve nonresearchers: N/A			
	Composition: N/A			

Study Details	Gaps	Needs	Prioritization	Impact
other—psychological health *Funding organization(s):* government—DoD *Setting:* U.S. *Timeline:* N/A *Cost:* Panel members devoted approximately 25% per member over the course of a year.	*Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	consensus, the expert panel eliminated redundancies and distilled the 236 research needs into 32 potential gaps. *Researcher-only topic identification* *Review in-progress research:* Gaps were assessed against in-progress research and DoD policy for eligibility. *Review source materials:* Panel scanned authoritative source reports (e.g., clinical practice guidelines, policy documents). *Other:* Panel developed exclusion criteria based on professional expertise and consensus. **Need criteria** *Criteria:* other—Excluded gaps if (1) addressing the gap did not optimize preventative or clinical care in the military setting; (2) DoD policy rendered the gap irrelevant; and (3) addressing the gap was not achievable in the military setting if relevant research were to be undertaken. *Final determination method:* vote, rating, rank; discussion and professional consensus **Stakeholders** *Involve nonresearchers:* no—Expert panel consisted of a core team of six civilian SMEs, including four psychologists, an epidemiologist, and a neuroscientist. *Composition:* researchers *Identification method:* purposive—Panel selected based on proficiency in scientific methodology and systematic literature review processes and expertise in military psychology health care and research. *Level of engagement:* coproduction **Inputs** *Technology or tools:* N/A *Other inputs:* systematic searching of	military health system; based on existing research evidence and current research investments, how much remains a gap *Final determination method:* vote, rating, rank—five-point rating scale used for prioritization. Panel members' responses to each metric were tallied and an average score was derived. **Stakeholders** *Involve nonresearchers:* no—expert panel *Composition:* researchers—Panel consisted of a core team of six civilian SMEs, including four psychologists, an epidemiologist, and a neuroscientist. *Identification method:* purposive—Panel was identified based on proficiency in scientific methodology and systematic literature review processes and expertise in military psychology health care and research. *Level of engagement:* coproduction **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Challenges** Subjectivity bias. Reliance on authoritative sources. Generalizability.

Study Details	Gaps	Needs	Prioritization	Impact
		databases (PubMed, RAND, National Center for PTSD, AHRQ, Cochrane, Trends journals and Google Scholar); DoD documents were scanned by panel members		

Parker et al., 2019

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): August 2017–May 2018	**Strategy or method** N/A	**Strategy or method** *JLA PSP*	**Strategy or method** *JLA*	**Evaluation** *Method:* N/A
Aim: combination of research needs and priorities	**Gap criteria** *Criteria:* N/A	**Need criteria** *Criteria:* importance to stakeholders	**Prioritization criteria** *Criteria:* importance to stakeholders	*Outcome:* N/A **Replication**
Health condition: physical health—multimorbidity, multiple conditions in later life	*Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A	*Final determination method:* other—thematic analysis performed on all relevant free text submissions	*Final determination method:* consensus—ranking	Yes **Challenges** For these priorities to be
Topic or focus area: treatment	*Composition:* N/A *Identification method:* N/A	**Stakeholders** *Involve nonresearchers:* yes	**Stakeholders** *Involve nonresearchers:* yes	developed further, they will need to be incorporated by research funders in calls for
Funding organization(s): government—UK NIHR	*Level of engagement:* N/A **Inputs**	*Composition:* patients and the public; clinicians; researchers—data analysts	*Composition:* patients and the public; clinicians; researchers—data analysts	proposals. Participants may not be representative of the older
Setting: other country—UK	*Technology or tools:* N/A *Other inputs:* N/A	*Identification method:* stakeholder organization—Partner organizations were identified through a process of	*Identification method:* stakeholder organizations—Partner organizations identified through a process of peer	population.
Timeline: 6–12 months		peer knowledge and consultation, through the steering group members'	knowledge and consultation, through the steering group members'	
Cost: N/A		networks. *Level of engagement:* collaboration	networks. *Level of engagement:* collaboration	
		Inputs *Technology or tools:* Survey was advertised widely online through social media, academic, professional and charity networks; online survey or paper copy could be requested.	**Inputs** *Technology or tools:* N/A *Other inputs:* interim priority setting—Participants listed ten most important questions, prioritized by vote counting; top ten questions from each group were merged into list taken to final priority workshop.	
		Other inputs: Survey piloted in conjunction with lay members of a local public involvement; survey gathered free-text responses about treatment uncertainties; paper surveys and interviews also conducted; and thematic analysis performed to categorize similar research needs.	Final priority workshop: based on nominal group technique, three rounds of facilitated discussion and prioritization. First and second rounds involved small groups with mixed stakeholder types; third round was a plenary with all participants. Research needs from interim priority setting were ranked and reranked, and the plenary involved agreeing to the top ten questions. Also, research priorities of the National Institute for Health and Care Excellence and the Academy of	

Study Details	Gaps	Needs	Prioritization	Impact
			Medical Sciences were extracted from published reports to help identify key priorities.	

Parsons et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—rheumatic disease *Topic or focus area:* treatment *Funding organization(s):* foundations, charitable organizations—Arthritis Research UK *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* focus groups **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* other—focus groups **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* stakeholder organizations: Arthritis Care (a UK based national charity) and Barbara Ansell National Network for Adolescent Rheumatology *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* focus groups—The framework approach to qualitative data analysis was chosen because of its transparent nature and utility within a research team and its strength in facilitating between and within case analysis.	**Strategy or method** *Qualitative methods:* The framework approach to qualitative data analysis was chosen because of its transparent nature and utility within a research team and its strength in facilitating between and within case analysis. **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rankings **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* focus group, ranking	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Recruitment for this study was poor in some areas, particularly if there was not a Public and Patient Involvement coordinator or transition coordinator who could help with recruitment.

Pollock et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February 2009–November 2011 *Aim:* combination of research needs and priorities *Health condition:* physical health—life after stroke *Topic or focus area:* symptom management *Funding organization(s):* government—Scottish government's National Advisory Committee for Stroke	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—all uncertainties included **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians—long-term care and key health professional groups; researchers—stroke research and delivery of care organizations	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—consensus meeting until unanimous agreement on top ten priorities **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** A number of submitted treatment uncertainties were beyond the defined scope of this PSP. Poor responses from caregivers.

Study Details	Gaps	Needs	Prioritization	Impact
Setting: other country—Scotland *Timeline:* more than 18 months *Cost:* N/A	*Other inputs:* N/A	*Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* Uncertainties solicited via email and online by posting project materials on relevant websites. *Other inputs:* Treatment uncertainties were solicited by email, mail, internet, face-to-face meetings at stroke support groups or clubs, and national professional meetings and conferences. Submitted uncertainties were reviewed and similar questions merged and answered and nontreatment questions removed, with questions formatted using standard structure.	organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* interim prioritization—Treatment uncertainties were grouped under key headings, and participants were asked to rank their personal ten most important priorities. Request solicited by postal mail, email, and face-to-face visits to stroke support groups. Final priority-setting consensus meeting: Prior to meeting, participants were sent a list of shared priorities and asked to rank in order of priority the importance of questions. First phase of the meeting: Small groups asked to rank questions in order of importance; method of gaining agreement on rank order of the questions was not prescribed. Second phase of the meeting: Ranked order from each of the three groups was summed for a total score; a combined ranking was determined; and results were presented in plenary session. After discussion, participants moved the priority order of cards with questions until consensus was reached, and there was unanimous agreement on top ten research priorities.	

Pollock et al., 2012; Pollock, St. George, and Firkins, 2014; Pollock, St. George, Firkins, Crow, et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2010 *Aim:* combination of research needs and priorities *Health condition:* physical health—stroke *Topic or focus area:* symptom management *Funding organization(s):* government—Scottish	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A	**Strategy or method** *JLA PSP* *Literature review:* checking of existing research evidence **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders**	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public,	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** It was not possible to be certain whether mail, email or telephone submissions occurred as a result of the

Study Details	Gaps	Needs	Prioritization	Impact
government's National Advisory Committee for Stroke, Scottish Government Health Directorate's Chief Scientist Office *Setting:* other country—Scotland *Timeline:* N/A *Cost:* N/A	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* snowballing—Stakeholder organization members cascaded the questionnaires to other members of their organizations, a representative sample of stroke survivors, and carer and health care professionals and organizations. *Level of engagement:* collaboration **Inputs** *Technology or tools:* Standard presentation describing the project—available as PowerPoint presentation, table-top presentation, and online presentation with recorded narration *Other inputs:* Standard JLA questionnaires were mailed, with reply-paid return envelopes, to individual stroke survivors, and placed on the JLA website and on a project website. Responses could be returned via mail or email, and a telephone number (with answer-phone) was provided for verbal responses. FREE TEA model aphasia-friendly information sheet. Submissions accepted in any format—written, emailed, telephone. Assistance with responses by scribing when necessary (during face-to-face meetings or by telephone). Accessible assistance providing necessary support, guidance, and feedback (during face-to-face meetings or via telephone or email).	clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* Questionnaires *Other inputs:* At a final consensus meeting, a representative group of stroke survivors, carers, and health professionals unanimously agreed their top ten priorities for future research (panel).	Standard Survey or FREE TEA. It is therefore possible that a number of our emailed and mailed responses attributed to the Standard Survey were in fact prompted by FREE TEA visits. Not successful in eliciting responses from carers. Did not gather sufficient information to enable us to explore whether it achieved truly representative and equitable involvement from different populations. Certain groups of people may have been excluded.

Prior et al., 2017

Date(s): 2016 *Aim:* combination of research needs and priorities *Health condition:* physical health—miscarriage	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* Open-ended listing	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—When disagreement arose, consensus was reached by	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: basic science, prevention, treatment *Funding organization(s):* professional association; health care delivery organization; other—university *Setting:* other country—UK *Timeline:* 6–12 months *Cost:* N/A	*Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* steering group. An anonymous public survey was distributed by partner organizations, promotion in newsletters and conferences, printed flyers in clinics; online forums and social media. Unrelated questions were removed; remaining questions were assigned categories by a single researcher; each category was collaboratively reviewed by at least one provider and one patient representative from steering group. At this stage, duplicates were excluded and questions were combined and rephrased to create summary questions. All summary questions were checked against the evidence base to determine whether they were true questions or respondents were unaware that there was already evidence to answer the questions.	raised-hands voting **Stakeholders** *Involve nonresearchers:* yes—women and those affected by miscarriage working alongside health care professionals *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* e-survey *Other inputs:* Face-to-face workshop, JLA facilitator independently chaired steering group	**Challenges** Unable to assess response rate. No data were collected for social status, income and level of education. Predominantly UK based, with only 5% of respondents from overseas. The optimum proportion of respondents for each category of participants is not known.

Rangan et al., 2016

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): January 2014–July 2015 *Aim:* combination of research needs and priorities *Health condition:* physical health—common shoulder pain and problems *Topic or focus area:* treatment *Funding organization(s):*	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—open-ended responses collated into categories **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers	**Strategy or method** *JLA:* JLA advisor, coordinator and data analyst **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—Each group was led by an independent JLA advisor, and the groups were rotated throughout the day, with the process continuing until there was agreement over the top ten uncertainties	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

187

Study Details	Gaps	Needs	Prioritization	Impact
professional association—British Elbow and Shoulder Society, the British Orthopaedic Association; government—NIHR *Setting:* other country—UK *Timeline:* more than 12 months to 18 months *Cost:* £25,000	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* electronic and paper surveys *Other inputs:* JLA advisor and coordinator	**Stakeholders** *Involve nonresearchers:* yes—patients, carers, health professionals *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations—"partner organizations" and individuals *Level of engagement:* coproduction **Inputs** *Technology or tools:* online and paper surveys *Other inputs:* steering committee, JLA advisor; face-to-face meeting, using group discussions and plenary sessions. Research needs were discussed, considered, and ranked by breakout groups with equal representation of stakeholders.	

Rankin et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—physiotherapy *Topic or focus area:* treatment *Funding organization(s):* professional association—Chartered Society of Physiotherapy *Setting:* other country—UK *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** Other—Modified Delphi **Need criteria** *Criteria:* burden of the disease; potential value—addresses a significant need or gap; other—likelihood of implementation *Final determination method:* other—Content analysis identified research themes. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Round 1 requested up to five priorities and supporting statements for research topics for physiotherapy in the UK.	**Strategy or method** Other—modified Delphi **Prioritization criteria** *Criteria:* burden of the disease; importance to stakeholders; potential value *Final determination method:* other—Delphi **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Round 2 rated importance of research topics using five-point scale; level of consensus was established by percentage of agreement using the coefficient of variation. Consensus	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
			across all participants was evaluated using Kendall's coefficient of concordance (W), which evaluated the degree of agreement in the ranking of the topics by participants. Round 3 provided feedback on Round 2 through list of research topics reaching consensus and a summary of the whole panel's ratings. Rated each topic again and established consensus as in Round 2.	

Restall et al., 2016

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—HIV *Topic or focus area:* symptom management *Funding organization(s):* government—CIHR *Setting:* other country—Canada *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** Other—World Café **Need criteria** *Criteria:* importance to stakeholders, N/A *Final determination method:* open-ended listing—All of the topics that had been discussed were included. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* purposive—Diversity based on those living with and without HIV; different races, classes, and literacy levels; and rural and urban dwellers. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Day 1 of two-day conference used World Café method.	**Strategy or method** Other—Dotmocracy **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* Vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, policymakers, researchers *Identification method:* purposive—Purposively recruited participants for diversity, i.e., those living with and those without HIV; people of different races, classes, and literacy education levels; and rural and urban dwellers. *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* On day 2 of two-day conference, individuals voted on topics by posting sticky dots on wall next to choices.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

Rowe et al., 2014; Perros et al., 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): April–July 2012 *Aim:* combination of research needs and priorities *Health condition:* physical health—sight loss and eye conditions	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A	**Strategy or method** JLA PSP **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes

189

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: prevention, treatment, diagnosis, assessment, epidemiology *Funding organization(s):* professional association—College of Optometrists, Royal College of Ophthalmologists and UK Vision Strategy; Moorfields Eye Hospital, government—NIHR foundations, charitable organizations—Fight for Sight other—JLA *Setting:* other country—UK *Timeline:* less than 6 months *Cost:* N/A	**Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations—organizations with member bases and community influence *Level of engagement:* collaboration **Inputs** *Technology or tools:* survey *Other inputs:* systematic review	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations: survey was disseminated by patient groups, professional bodies, at conferences and through the media *Level of engagement:* collaboration **Inputs** *Technology or tools:* Survey available for completion online, by phone, by post and by alternative formats *Other inputs:* Steering committee, data analysis, workshop For final prioritization, one-day workshops for each research topic were conducted.	**Challenges** Unable to calculate a response rate for the survey. Did not request the views of "pure" researchers.

Salmond, 1994

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—orthopedic nursing *Topic or focus area:* treatment *Funding organization(s):* professional association—National Center for Nursing Research *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Consensus methods:* Delphi process **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—Delphi **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Round 1 was an open-ended survey asking to identify five important questions that should be studied.	**Strategy or method** N/A **Prioritization criteria** *Criteria:* importance to stakeholders, Potential value *Final determination method:* consensus—rankings **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Round 2—topic statements from Round 1 survey content analyzed and distilled into a 91-item questionnaire with each rated on importance and impact using a seven-point scale.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
			Round 3—Round 2 administered again with ratings from Round 2 included. High priority defined as items in which 80% of panelists ranked the item with a 5, 6, or 7 rating.	

Saltzman et al., 1997

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—foot and ankle care *Topic or focus area:* treatment *Funding organization(s):* professional association *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* Identify five areas needing further investigative effort. **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Participants were asked to identify five areas needing further investigative effort.	**Strategy or method** *Quantitative methods* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—Distribute 100 points among categories. **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Distributed 100 points among list of 40 categories according to sense of respective priority. List of 20 categories that received greatest weighting in previous step was resubmitted to participants, along with original distributions; participants were asked to redistribute 100 total points among 20 categories.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Selgrade et al., 1999

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): September 1998 *Aim:* combination of research needs and priorities *Health condition:* physical health—foot and ankle care *Topic or focus area:* basic science *Funding organization(s):* professional association *Setting:* U.S.	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** *Qualitative methods:* Identify five areas needing further investigative effort. **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians	**Strategy or method** *Quantitative methods* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—distribute 100 points among categories. **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians *Identification method:* stakeholder	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

191

Study Details	Gaps	Needs	Prioritization	Impact
Timeline: N/A *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Participants were asked to identify five areas needing further investigative effort.	organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Distributed 100 points among list of 40 categories according to sense of respective priority. List of 20 categories that received greatest weighting in previous step was resubmitted to participants, along with original distributions, and participants were asked to redistribute 100 total points among 20 categories.	

Singh, 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2011–2012 *Aim:* combination of research needs and priorities *Health condition:* physical health—gout *Topic or focus area:* treatment *Funding organization(s):* other—University of Alabama *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** Other—nominal group technique **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rank scores **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* convenience *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** Other—nominal group technique **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rank scores **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* convenience *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Small sample size, generalizability challenges.

Smith, Keating, et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): September 2015–January 2017 *Aim:* combination of research needs and priorities *Health condition:* physical health—emergency medical treatment *Topic or focus area:* treatment *Funding organization(s):* professional association: Royal College of	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A	**Strategy or method** JLA PSP **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—All uncertainties solicited by survey. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—final plenary ranking session where the entire group reached a consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Deciding whether to report the research priorities for all topics within emergency medicine or whether to divide into subspecialty areas. The style of questions

Study Details	Gaps	Needs	Prioritization	Impact
Emergency Medicine *Setting:* other country—UK *Timeline:* more than 12 months to 18 months *Cost:* N/A	*Other inputs:* N/A	*Identification method:* *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* N/A	*Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* workshop	varied, leading to debate regarding the broader intention or application of some questions. Less direct patient involvement than expected.
Steele et al., 2008				
Date(s): N/A *Aim:* combination of research needs and priorities *Health condition:* physical health—pediatric palliative care *Topic or focus area:* symptom management *Funding organization(s):* government—CIHR *Setting:* other country—Canada *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Qualitative methods:* Panel of health professionals was identified and listed five research priorities and questions relevant for advancing knowledge. **Need criteria** *Criteria:* potential value—advancing knowledge *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, researchers *Identification method:* stakeholder organizations—investigators contacted the Canadian Network of Palliative Care for Children purposive—identified list of experts *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* In phase one, a panel of health professionals identified five research priorities and questions relevant for advancing knowledge	**Strategy or method** *Quantitative methods:* List of questions and needs ranked on five-point Likert scale; panel was asked to identify five priority questions and needs **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—Panelists further ranked narrowed-down list of needs by selecting five priorities; needs with 50% consensus were deemed priorities. **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, researchers *Identification method:* stakeholder organization—Investigators contacted the Canadian Network of Palliative Care for Children, Purposive: Purposive sampling; identified list of experts *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* In phase two, a panel rated importance of questions and needs using a five-point Likert scale; consensus cutoff of 66% minimum indicating a rating of 4 or 5 (quite/very important). In phase three, the panel was asked to identify five research priorities from the list of 14 questions and needs meeting minimum consensus cutoff.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** Small sample size. Topics where participants eventually reached a consensus were broad and quite unspecific. Sample excludes the voices of patients and families.

Study Details	Gaps	Needs	Prioritization	Impact
			Any question with at least 50% consensus was deemed a priority.	

Stephens et al., 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): December 2013–November 2014 *Aim:* combination of research needs and priorities *Health condition:* physical health—mesothelioma *Topic or focus area:* treatment, symptom management, diagnosis, assessment, epidemiology *Funding organization(s):* government—NIHR *Setting:* other country—UK *Timeline:* 6–12 months *Cost:* N/A	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP* **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations: known support organizations and health care professionals *Level of engagement:* collaboration **Inputs** *Technology or tools:* survey *Other inputs:* literature review, review by steering committee	**Strategy or method** *JLA* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—final consensus meeting, mixed working groups led by independent JLA facilitator, rank final questions, combined scores; reconfigured into new working groups to review combined rankings, discussion, changed rankings **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations: known support organizations and health care professionals *Level of engagement:* collaboration **Inputs** *Technology or tools:* Interim prioritization survey *Other inputs:* steering committee, JLA facilitator, consensus meeting	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Hard to find patients for steering group, and those found may not have been typical. Difficult to put questions in lay language. Mediating contrast between patient and physician expectations of time. Importance of some questions varied significantly between initial and final prioritization lists. Trying to put questions in order of importance proved difficult.

Stolee et al., 2011

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2005 *Aim:* combination of research needs and priorities *Health condition:* physical health—Alzheimer's disease and related dementias *Topic or focus area:* treatment *Funding organization(s):* government—funded by the government of	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A	**Strategy or method** *Qualitative methods:* Informant interviews were conducted to explore research needs. *Quantitative methods:* Identified research needs were rated according to importance, impact, and research capacity. Rating scales. *Review in-progress research:* environmental scan to identify current funding priorities, organizations funding research	**Strategy or method** *Consensus methods* *Workshop, meeting, conference* **Prioritization criteria** *Criteria:* importance to stakeholders, potential value, feasibility *Final determination method:* consensus—Larger group discussions provided an opportunity to determine consensus with calls for endorsement of identified research priorities. Consensus was defined as "what participants could support" rather than	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
Canada but administered through the Alzheimer's Society of Ontario *Setting:* other country—Canada *Timeline:* N/A *Cost:* N/A	**Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Need criteria** *Criteria:* importance to stakeholders; potential value—impact; feasibility—research capacity *Final determination method:* open-ended listing—All identified areas as needing research were listed. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations—Persons with dementia and caregivers were recruited from support groups conducted by two chapters of the Alzheimer's Society; purposive—identified list of experts *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* The project consisted of five components: (a) an environmental scan, (b) key-informant interviews, (c) focus group interviews, (d) quantitative surveys, and (e) a consensus workshop. Environmental scan was to identify key Alzheimer's disease and related dementias researchers in Ontario, agencies and organizations funding research into Alzheimer's disease and related dementias research, current funding priorities, and potential partnerships. Key informant and focus group interviews were conducted with researchers, clinicians, and patients and caregivers to explore research needs. Quantitative surveys were used to confirm issues raised by respondents in the environmental scan and key informant interviews. All identified research needs listed and rated their importance using numerical and Likert scales.	100% agreement. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* facilitated consensus process that included prework (i.e., summary of prior work and preparatory questions) and a workshop involving presentations by invited speakers, small-group exercises, and larger group discussions—consensus defined as "what participants could support" rather than 100% agreement *Other inputs:* Workshop	

Study Details	Gaps	Needs	Prioritization	Impact
		Consensus workshop built on the preceding four components at a conference in 2005.		

Strauss et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2002–2006	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*Literature review*	*Qualitative methods*	*Method:* N/A
Health condition: physical health—joint pain	**Gap criteria**	*Review source materials:* JLA	*Quantitative methods*	*Outcome:* N/A
Topic or focus area: treatment	*Criteria:* N/A	**Need criteria**	**Prioritization criteria**	**Replication**
Funding organization(s): government—MRC, NIHR	*Final determination method:* N/A	*Criteria:* N/A	*Criteria:* importance to stakeholders	N/A
Setting: other country—UK	**Stakeholders**	*Final determination method:* other—Researchers worked collaboratively with the Arthritis Research UK Primary Care Centre's Research Users' Group to devise survey questions	*Final determination method:* vote, rating, rank—rankings	**Challenges**
Timeline: N/A	*Involve nonresearchers:* N/A		**Stakeholders**	There was some nonresponse, and those who did respond may be considered a select group who had responded to two previous surveys. They were also recruited from a particular geographical area.
Cost: N/A	*Composition:* N/A	**Stakeholders**	*Involve nonresearchers:* yes	
	Identification method: N/A	*Involve nonresearchers:* yes	*Composition:* patients and the public	
	Level of engagement: N/A	*Composition:* patients and the public, researchers	*Identification method:* other—general population-based cohort study of joint pain in all adults registered at three general practices	
	Inputs	*Identification method:* stakeholder organizations— Arthritis Research UK Primary Care Centre's Research Users' Group	*Level of engagement:* collaboration	
	Technology or tools: N/A	*Level of engagement:* collaboration	**Inputs**	
	Other inputs: N/A	**Inputs**	*Technology or tools:* N/A	
		Technology or tools: N/A	*Other inputs:* Mailed survey	
		Other inputs: literature review; scan of resources (e.g., JLA); Researchers worked collaboratively with the Arthritis Research UK Primary Care Centre's Research Users' Group to devise a survey question to include in a population-based survey instrument.		

Tomlinson, Yasmay, et al., 2014

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*CHNRI*	*CHNRI*	*Method:* N/A
Health condition: psychological health—intellectual and development disabilities	**Gap criteria**	**Need criteria**	*Quantitative methods:* the proposed options received a score on each of the five criteria ranging from 0–100%.	*Outcome:* N/A
Topic or focus area: basic science, prevention,	*Criteria:* N/A	*Criteria:* potential value—addresses inequities; other—answerability; support within the context	**Prioritization criteria**	**Replication**
	Final determination method: N/A	*Final determination method:* open-ended listing: participants listed five research questions	*Criteria:* potential value—"applicability and impact"; addresses inequities—"equity"; feasibility, other—"answerability," "support within the	Yes
	Stakeholders			**Challenges**
	Involve nonresearchers: N/A			Biases in the identification, sampling, and participation of experts.
	Composition: N/A			
	Identification method: N/A			

Study Details	Gaps	Needs	Prioritization	Impact
treatment, service delivery, models of care *Funding organization(s):* consumer organization—Autism Speaks; foundations, charitable organizations—Shirley Foundation, Autistica; other—WHO *Setting:* other country—authors from multiple countries *Timeline:* N/A *Cost:* N/A	*Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, researchers *Other:* human rights groups, NGOs, community-based organization *Identification method:* snowballing; purposive—identified list of experts *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Experts, service user organizations, and representatives from civil society generated research questions they believed were priorities.	context" *Final determination method:* vote, rating, rank—Responses were scored and ranked. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Other:* experts known for their work on developmental disabilities *Identification method:* snowballing *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* panel, list of questions for scoring or ranking	Did not address the appropriateness of particular research methodologies or paradigms.
Tong, Crowe, et al., 2015				
Date(s): February 2014 *Aim:* combination of research needs and priorities *Health condition:* physical health—CKD *Topic or focus area:* treatment *Funding organization(s):* government—NHMRC; consumer organization—Kidney Health Australia; other—University of Sydney *Setting:* other country—Australia *Timeline:* less than 6 months *Cost:* Workshop capacity was determined by resource availability (approximate budget of A$20,000 for direct workshop costs excluding personnel salaries).	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *JLA PSP:* Adapted JLA PSP and framework for health research priority setting from Viergever et al. **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—Each participant ranked top five priorities. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* snowballing, stakeholder organizations, purposive *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Phase 1a— Participants contribute questions. Phase 1b—Each participant ranks top five priorities; discussion; identifies top ten based on rankings. Synthesis 1—Group facilitators and	**Strategy or method** *Workshop, meeting, conference* **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—rankings **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* snowballing, stakeholder organizations, purposive *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Phase 2—Top ten questions for each CKD category provided to each group.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
		patient representative reviewed questions for clarity.		

Tong, Sainsbury, et al., 2008

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): February 2014	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	*JLA PSP:* adapted JLA PSP and Viergever's health research priority–setting framework	*JLA:* adapted JLA PSP and Viergever's health research priority–setting framework	*Method:* N/A
Health condition: physical health—CKD	**Gap criteria**			*Outcome:* N/A
	Criteria: N/A	**Need criteria**	**Prioritization criteria**	**Replication**
Topic or focus area: treatment	*Final determination method:* N/A	*Criteria:* importance to stakeholders	*Criteria:* importance to stakeholders	Yes
	Stakeholders	*Final determination method:* vote, rating, rank—rank top five questions	*Final determination method:* vote, rating, rank—rankings	
Funding organization(s): government—NHMRC	*Involve nonresearchers:* N/A	**Stakeholders**	**Stakeholders**	**Challenges**
Setting: other country—Australia	*Composition:* N/A	*Involve nonresearchers:* yes	*Involve nonresearchers:* yes	Culturally and linguistically diverse patients and caregivers were relatively underrepresented.
	Identification method: N/A	*Composition:* patients and the public, clinicians, researchers	*Composition:* patients and the public, clinicians, researchers	The extent to which the priorities address all relevant Australian stakeholders may be limited.
Timeline: less than 6 months	*Level of engagement:* N/A	*Identification method:* snowballing, stakeholder organizations, purposive	*Identification method:* snowballing, stakeholder organizations, purposive	Differences in research priorities by demographics.
	Inputs	*Level of engagement:* collaboration	*Level of engagement:* collaboration	could not be determined because the workshop was designed to develop consensus and not powered to detect differences attributed to demographic characteristics.
Cost: Workshop capacity was determined by resource availability (approximate budget of A$20,000 for direct workshop costs, excluding personnel salaries), group manageability, and feasibility.	*Technology or tools:* N/A	**Inputs**	**Inputs**	
	Other inputs: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
		Other inputs: Phase 1—Six facilitated mixed groups (i.e., patients, caregivers, and health professionals) categorized by CKD topics; each listed one to two questions; each participant ranked top five priorities; and each group identified top ten based on rankings.	*Other inputs:* Phase 2—Groups discussed and ranked top ten questions for each respective CKD category; the top five ranked questions progressed onto the next phase. Phase 3—Group votes were summed, and top five questions from each category were distilled into a list of 20 research questions, which were presented and discussed by participants in a plenary session; individually ranked top 20 questions from 1(important) to 20(least important).	

Uneke et al., 2013

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): December 2010	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Aim: combination of research needs and priorities	N/A	ENHR	ENHR	*Method:* N/A
Health condition: physical health	**Gap criteria**	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
	Criteria: N/A	*Criteria:* importance to stakeholders, patient centeredness, potential value, addresses inequities, feasibility	*Criteria:* importance to stakeholders; patient centeredness; appropriateness—whether the proposed research is well	**Replication**
	Final determination method: N/A			Yes

198

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: service delivery and models of care *Funding organization(s):* other—Alliance for Health Policy and Systems Research of the WHO *Setting:* other country—Nigeria *Timeline:* less than 6 months *Cost:* N/A	**Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* • clinicians—health based associations • policymakers—92 policymakers invited out • researchers • other—hospital administrators *Identification method:* other—part of a mentorship program for evidence-informed policymaking organized to enhance the capacity of Nigerian policymaker *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* priority-setting lecture, breakout discussion groups	suited to the target society; ethical and moral issues; human rights issues; legal aspects; political acceptability and commitment of the responsible policymakers; potential value—benefit of using or implementing the research results and evaluation of the merit and usefulness of the research outcome; research utilization; public health significance; economic impact; development impact; feasibility—capacity of the system to undertake the research, cost justification, time justification and funding support; other—relevancy, whether the proposed research is the right kind for the right people and that it is pertinent to the health problems of the community, without disregarding equity issues *Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* policymakers; researchers; other—hospital administrators *Identification method:* purposive—part of a mentorship program for evidence-informed policymaking *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* training, deliberative discussion	**Challenges** N/A
Van Middendorp et al., 2016				
Date(s): 2013–2014 *Aim:* combination of research needs and priorities *Health condition:* physical health—spinal cord injury *Topic or focus area:* treatment, symptom management	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A	**Strategy or method** JLA PSP **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* open-ended listing—Information manager determined, from all the entries submitted, those that were research questions that had not yet been	**Strategy or method** JLA **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank—In a final large group discussion, all workshop attendees came together at the end of the day to discuss the aggregate ranked list of	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** Small response rate from caregivers

Study Details	Gaps	Needs	Prioritization	Impact
Funding organization(s): government—NIHR Oxford Biomedical Research Centre *Setting:* other country—UK *Timeline:* more than 18 months *Cost:* N/A	*Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	adequately answered by research. **Stakeholders** *Involve nonresearchers:* yes—consumer organization, health care professional societies, caregivers *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online and paper survey *Other inputs:* Information manager determined, from all the entries submitted, research questions that had not yet been adequately answered by research.	the uncertainties. Cards were placed on the floor, and participants gathered around for the discussion and were asked to focus on agreeing a top ten. This was a final opportunity for participants to make a case for any particular uncertainty and its position in the list before the final result was decided and agreed on. **Stakeholders** *Involve nonresearchers:* yes: consumer organization, health care professional societies, caregivers *Composition:* patients and the public, clinicians *Identification method:* stakeholder organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* online or paper survey, online interim survey *Other inputs:* processing of research questions by information manager A consensus meeting was led by three experienced and independent JLA-affiliated facilitators.	

Gaps, Needs, and Priorities

Bennett et al., 2010

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps, needs, and priorities *Health condition:* physical health: gestational diabetes mellitus *Topic or focus area:* treatment *Funding organization(s):* government—AHRQ *Setting:* U.S. *Timeline:* N/A *Cost:* N/A	**Strategy or method** PICO *Review source materials:* 2008 evidence report *Other:* feedback from authors of 2008 evidence report **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* *Composition:* researchers *Identification method:* purposive—authors of prior evidence report	**Strategy or method** *Qualitative methods:* asked whether each research question was worded clearly *Quantitative methods:* rated clinical benefit, importance, and feasibility *Workshop, meeting, conference:* in-person feedback **Need criteria** *Criteria:* potential value; feasibility *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public;	**Strategy or method** *Consensus methods* **Prioritization criteria** *Criteria:* potential value *Final determination method:* consensus; at least 75% of stakeholders rating clinical benefit/importance within a single category **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, researchers *Identification method:* stakeholder organizations: "stakeholders from	**Evaluation** *Method:* yes *Outcome:* An online tool (Survey Gizmo) was used to obtain feedback from all those who participated in the project on the following domains: (1) whether adequate information was provided to participate effectively; (2) whether final list of research questions accomplished study objective; (3) whether local and external stakeholder groups were

Study Details	Gaps	Needs	Prioritization	Impact
	Level of engagement: collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* review of prior 2008 evidence report, feedback from authors of 2008 evidence report, translation of research gaps into researchable questions using PICO framework	clinicians; researchers—epidemiologist, methodologist *Identification method:* convenience—invited stakeholders from authors' institution *Level of engagement:* unclear—"provide feedback to refine the research questions" **Inputs** *Technology or tools:* online feedback via Survey Gizmo *Other inputs:* 1.5 hour in-person meeting to present results of online feedback and refine research questions and to solicit further feedback	various institutions" *Level of engagement:* collaboration **Inputs** *Technology or tools:* online feedback via Survey Gizmo using Delphi approach (three rounds) *Other inputs:* N/A	comprehensive; and (4) usefulness of obtaining feedback from report authors, local and external stakeholders. **Replication** N/A **Challenges** Limited input from patients and patient liaisons. Resource-intense process, with eight steps, including three Delphi rounds.

McKoy et al., 2010; Chang et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps, needs and priorities *Health condition:* physical health—weight gain during pregnancy *Topic or focus area:* treatment *Funding organization(s):* other—Alliance for Health Policy and Systems Research of the WHO *Setting:* other country—Nigeria *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Literature review:* update of literature from prior report *Review source materials:* analysis of the 2008 review, the 2009 Institute of Medicine Body Mass Index Guidelines, and other publications for stated future research needs and knowledge gaps **Gap criteria** *Criteria:* N/A *Final determination method:* other—scan of literature, resources, prior review **Stakeholders** *Involve nonresearchers:* unclear—does not specify who conducted updated literature scan, review of resource materials *Composition:* clinicians; researchers; other—national foundations and societies related to weight gain *Identification method:* N/A *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Drawing on the 2008	**Strategy or method** *Quantitative methods:* ranking by stakeholders Consultation with stakeholders submitted comments regarding the initial list and suggested topics that may have omitted **Need criteria** *Criteria:* importance to stakeholders—"overall importance"; potential value—"clinical utility," "potential to advance science" Feasibility **Stakeholders** *Involve nonresearchers:* yes *Stakeholder organizations:* asked for the organizations to nominate potential stakeholders in four areas: advocacy, clinical practice, research, and research funding priorities *Composition:* patients and the public, clinicians, other—national foundations and societies related to weight gain *Level of engagement:* collaboration *Final determination method:* consensus	**Strategy or method** ENHR **Prioritization criteria** *Criteria:* importance to stakeholders; patient centeredness; appropriateness—whether the proposed research is well suited to the target society, ethical and moral issues, human rights issues, legal aspects, political acceptability, and commitment of the responsible policymakers; potential value—benefit of using or implementing the research results and evaluating the merit and usefulness of the research outcome; research utilization; public health significance; economic impact; development impact; feasibility—capacity of the system to undertake the research, cost justification, time justification and funding support; other—relevance (whether the proposed research is the right kind for the right people and that it is pertinent to the health problems of the community, without disregarding equity issues) *Final determination method:*	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** Yes **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
	review, the 2009 Institute of Medicine Body Mass Index Guidelines, and other publications, developed a list of 37 research questions for electronic review by the stakeholder panel.	**Inputs** *The Modified Delphi Process:* Step 1: Snowballing. Panel submits comments on the initial list, including better ways to express research topics, ways to make the list broader and more comprehensive, and to suggest topics that may have been omitted. To make this as inclusive as possible, stakeholders are intentionally not asked to rank questions or to suggest ways to reduce the number of items at this snowballing point in the process. Step 2: Initial ranking and item reduction. After snowballing, stakeholders are asked to electronically rank the expanded list of research questions related to evidence gaps according to four domains (overall importance, clinical utility, feasibility, and potential to advance science) using a 0–10 scale. Lowest-ranking responses were eliminated. A ranking is low if fewer than 30 percent of stakeholders scored the item as a 9 or 10 across the four domains.	consensus **Stakeholders** *Involve nonresearchers:* yes *Composition:* policymakers; researchers; other—hospital administrators *Identification method:* purposive—part of a mentorship program for evidence-informed policymaking *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* training, deliberative discussion	

Rothenberg et al., 2010; Chang et al., 2012

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): N/A *Aim:* combination of research gaps, needs and priorities *Health condition:* physical health—localized prostate cancer *Topic or focus area:* treatment *Funding organization(s):* N/A *Setting:* government—AHRQ *Timeline:* N/A *Cost:* N/A	**Strategy or method** *Literature review:* MEDLINE search for studies conducted after previous EPC CER systematic review *Review in-progress research:* Update was conducted of studies cited in MEDLINE that were published since September 2007 and of clinical trials currently underway, derived from NLM, undated. *Review source materials:* reviewed Minnesota EPC CER **Gap criteria** *Criteria:* N/A *Final determination method:* other—Gaps were based on a previous CER systematic review, updated literature	**Strategy or method** *Qualitative methods:* one-on-one calls with each Technical Expert and Patient Panel (TEPP) member—The intent was to elicit interdisciplinary discussion among a small group (around nine participants) with an orientation to improving evidence in this area. This approach is primarily qualitative. *Consultation with stakeholders:* TEPP was asked to recommend important studies published since the publication of the Minnesota CER, agree on prioritization criteria, revise and prioritize the research gaps listed in the CER, and develop and prioritize a list of potential research studies to	**Strategy or method** Quantitative methods, workshop/meeting/conference, and consult with stakeholders **Prioritization criteria** *Criteria:* Importance to stakeholders—"current importance"; potential value—"potential for significant health impact," "incremental value"; feasibility *Final determination method:* email **Stakeholders** *Involve nonresearchers:* stakeholder organizations: affiliated with various professional societies and other stakeholder organization *Composition:* N/A	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** It was not always possible to schedule the entire group in a single conference call. Most of the teleconferences had to be held in two sessions, with about one-half of the participants on each call. A process of rank-ordering the research study priorities was used but, in many respects it was found that the qualitative discussions were more

Study Details	Gaps	Needs	Prioritization	Impact
	scan, and NLM, undated, search.	address those gaps.	*Identification method:* patients and the public, clinicians, researchers	informative. Potential research studies could only be sketched out at a very general level.
	Stakeholders	**Prioritization criteria**	*Level of engagement:* vote, rating, rank; ranked and final list approved	**Challenges**
	Involve nonresearchers: unclear—does not specify who conducted the updated literature review scan or NLM, undated, search but seems like authors	Asked the TEPP to agree on set of prioritization criteria.	**Inputs**	U.S.
	Composition: researchers	**Need criteria**	*Technology or tools:* The second conference call focused primarily on brainstorming ideas for projects that might address the then-final list of research gaps. Blue Cross and Blue Shield Association (BCBSA) TEC EPC staff wrote up the proposals and distributed them for more in-depth discussion during the third conference call, at which time another research gap was introduced by the TEPP (Methodologic Challenges II). After the third conference call, BCBSA TEC EPC staff rewrote the project descriptions and included all elements of the PICOS framework. After the third conference call, TEPP members were asked to rank the proposed studies for each gap, ranging from 1 for the lowest priority to the number of studies under that gap for the highest, (i.e., gap 1 had five proposed studies, so the highest rank was 5). The rank was a global score that took all prioritization criteria into account; separate scores were not requested for each criterion.	
	Identification method: convenience	*Criteria:* unclear—Stakeholders' input was solicited but unclear what process was used to accept or incorporate input.		
	Level of engagement: N/A	*Final determination method:* N/A		
	Inputs	**Stakeholders**		
	Technology or tools: N/A	*Involve nonresearchers:* yes—TEPP		
	Other inputs: prior comparative effectiveness research systematic review, updated literature scan, and NLM, undated, search	*Composition:* patients and the public, clinicians, researchers		
		Identification method: purposive—purposive sampling; identified list of experts		
		Level of engagement: consultation—TEPP provided input on list of gaps and prioritization criteria, but it was unclear whether suggestions were accepted at face value or whether there was a decisionmaking process to accept or reject suggestions.		
		Inputs	*Other inputs:* N/A	
		Technology or tools: These tasks were accomplished through an initial one-on-one telephone call between BCBSA Technology Evaluation Center (TEC) EPC staff and each TEPP member, followed by the first TEPP conference call, in which prioritization criteria and research gaps were reviewed. Following first call asked to rate gaps from initial CER via email for each criterion "Current Importance" and "Potential Health Impact" on a scale from 1 to 5 with a maximum score of 10 for a research gap by each member.		
		The BCBSA TEC EPC developed prioritization criteria for use by the TEPP derived from the AHRQ criteria used for topic selection in the Effective Health Care Program.		

Study Details	Gaps	Needs	Prioritization	Impact
		Other inputs: Quantitative methods—Rate research gaps with revised criteria. Workshop, meeting, conference—Second TEPP conference call involved reviewing research gap ratings, finalizing prioritization criteria, and brainstorming topics for research studies. Consult with stakeholders—TEPP reviewed categorization of research, added new research gap, reviewed and elaborated, rank-revised list of proposed research using PICOS format, and revised research gap list.		

Siegfried, Carbone, et al., 2017

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): December 2014–April 2015 *Aim:* combination of research gaps, needs, and priorities *Health condition:* physical health—public health emergency preparedness *Topic or focus area:* service delivery and models of care *Funding organization(s):* government—contract awarded by the U.S. CDC to NORC at the University of Chicago. *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Review source materials:* data previously gathered from SMEs within CDC **Gap criteria** *Criteria:* other—identified as important topics by CDC *Final determination method:* other—CDC identified important topics **Stakeholders** *Involve nonresearchers:* no *Composition:* researchers *Identification method:* purposive—academic researchers and representatives from multiple organizations *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* CDC identified important research questions following review of data previously gathered from SMEs within CDC who engaged routinely with the public health preparedness and response community.	**Strategy or method** *Qualitative methods:* focus groups with state and local public health preparedness staff and CDC staff *Quantitative methods:* survey asked to rank research questions **Need criteria** *Criteria:* importance to stakeholders *Final determination method:* vote, rating, rank **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, policymakers *Identification method:* convenience—nonrandom convenience sample of public health practitioners and CDC staff purposive—all health departments *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* Survey sent to universe of health departments and stratified random sample of health departments asking them to rank importance of each research question using a five-point scale and to list additional research needs. Research questions rated "extremely	**Strategy or method** *Quantitative methods:* Expert panel rank-ordered five most important questions. *Consensus methods:* Expert panel engaged in a consensus decisionmaking process to determine final priority list. **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—expert panel consensus decisionmaking process **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians—state and local public health preparedness staff; policymaker—CDC SMEs *Identification method:* purposive—a sample of local health departments *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* Expert panel rank-ordered the five most important questions; priority research questions were those with equal to or greater than median weighted average ranking. The expert panel engaged in a consensus decisionmaking process	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The survey was sent to the preparedness director or coordinator at each health department; hence, the responses are reflective of that individual's perspective. The response rate among local health departments was lower than that for public health emergency preparedness respondents. Respondents are not necessarily representative of the public health practitioner population. There may be additional topics not reflected in the final list of priority research questions. Some expert panel participants were challenged to define clear and focused research

Study Details	Gaps	Needs	Prioritization	Impact
		important" or "very important" by at least 50% of the survey respondents were included in initial list. Research questions mentioned by more than one respondent from focus groups and first expert panel meeting were also included.	to determine which questions should remain on the priority list and identified additional topics for inclusion.	questions.

Sutton et al., 2015

Study Details	Gaps	Needs	Prioritization	Impact
Date(s): 2010–2015 *Aim:* combination of research gaps, needs and priorities *Health condition:* physical health—breast cancer *Topic or focus area:* basic science, treatment, and etiology and risk factors *Funding organization(s):* government—contract awarded by the U.S. CDC to NORC. *Setting:* U.S. *Timeline:* less than 6 months *Cost:* N/A	**Strategy or method** *Literature review:* narrative review of the literature *Qualitative methods* *Quantitative methods* *Workshop, meeting, conference:* individual semistructured interviews and small-group meetings conducted at association's meeting *Review source materials:* review of 2004–2009 Special Research Initiatives–funded projects **Gap criteria** *Criteria:* potential value *Final determination method:* other—literature review **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* N/A *Other inputs:* literature review, semistructured interviews, online ballots via symposium, webinars	**Strategy or method** *Literature review:* other—interviews with Special Research Initiatives principal investigators and strategy team members and cancer experts, stakeholder input, webinar, science assessments, concept proposals **Need criteria** *Criteria:* potential value *Final determination method:* consensus **Stakeholders** *Involve nonresearchers:* yes—advocates, community participants and scientists *Composition:* patients and the public, researchers *Identification method:* unclear *Level of engagement:* collaboration **Inputs** *Technology or tools:* unclear *Other inputs:* literature reviews, interviews, webinars, workshops, stakeholder meetings, science and expert assessments	**Strategy or method** *Consensus methods:* A steering committee vetted the research questions identified; steering committee mix of scientists, advocates, clinicians and public health expertise, prioritized specific research questions; then developed into "Concept Proposals" **Prioritization criteria** *Criteria:* importance to stakeholders *Final determination method:* consensus—expert panel consensus decisionmaking process **Stakeholders** *Involve nonresearchers:* yes *Composition:* clinicians, state and local public health preparedness staff, policymakers (CDC SMEs) *Identification method:* purposive—a sample of local health departments *Level of engagement:* collaboration **Inputs** *Technology or tools:* online survey *Other inputs:* Expert panel rank-ordered the five most important questions; priority research questions were those with equal to or greater than median weighted average ranking. The expert panel engaged in a consensus decisionmaking process to determine which questions should remain on the priority list and also identified additional topics for inclusion.	**Evaluation** *Method:* N/A *Outcome:* N/A **Replication** N/A **Challenges** The survey was sent to the preparedness director or coordinator at each health department; hence, the responses are reflective of that individual's perspective. The response rate among local health departments was lower than that for public health emergency preparedness respondents. Respondents are not necessarily representative of the public health practitioner population. There may be additional topics not reflected in the final list of priority research questions. Some expert panel participants were challenged to define clear and focused research questions.

Appendix E. Health Research Funding Organization Evidence Tables

Table E.1. Evidence Table: Health Research Funding Organizations in North America

Study Details	Gaps	Needs	Prioritization	Impact
Bill and Melinda Gates Foundation (BMGF)				
BMGF, undated a; BMGF, undated b; BMGF, undated c; BMGF, undated d; BMGF, undated e				
Aim: priorities only *Health condition:* physical health, psychological health *Topic or focus area:* basic science, prevention, treatment, symptom management, diagnosis, assessment, epidemiology, service delivery, models of care, and etiology and risk factors *Funding organization(s):* case-study funding organization *Setting:* U.S. *Timeline:* N/A *Funding allocation:* in 2011, U.S. $462.6 million (Viergever and Hendriks, 2016)	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Unclear* **Prioritization criteria** *Criteria:* burden of the disease; potential value—where foundation can have greatest impact; addresses inequities—Global Health Division aims to reduce inequities in health *Final determination method:* unclear **Stakeholders** *Involve nonresearchers:* unclear *Composition:* unclear *Identification method:* unclear *Level of engagement:* unclear **Inputs** *Technology or tools:* unclear *Other inputs:* Each division develops goals and strategies before allocating resources and making investments. Data are continually collected and shared; lessons learned are reflected on; and course corrections are made as needed. Ongoing dialogue with our grantees and partners throughout strategy life cycle. At this stage of the foundation's growth, divisions and strategies are already in place. Each strategy is reviewed annually and adjustments made to implementation plan.	**Evaluation** *Method:* N/A *Outcome:* N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact

Canadian Institutes of Health Research (CIHR)

Campbell, 2010; CIHR, 2009; CIHR, 2015a; CIHR, 2015b; CIHR, 2016a; CIHR, 2016b; CIHR, 2018a; CIHR, 2018b; CIHR, 2018c; CIHR, 2018d; CIHR, 2019a; CIHR, 2019b; CIHR, 2019c; CIHR, 2019d, CIHR, 2019e; Plamondon et al., 2017; Woodgett, 2019

Study Details	Gaps	Needs	Prioritization	Impact
Aim: priorities only *Health condition:* physical health, psychological health *Topic or focus area:* basic science, prevention, treatment, symptom management, diagnosis, assessment, epidemiology, service delivery, models of care, and etiology and risk factors *Funding organization(s):* case-study funding organization *Setting:* other country—Canada *Timeline:* N/A *Funding allocation:* total health research expenditures—in 2013, U.S. $883.6 million (Viergever and Hendriks, 2016)	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* unclear *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* not well described as a separate process *Other inputs:* not well described as a separate process	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* not well-described for needs as a separate process *Other inputs:* not well-described for needs as a separate process	**Strategy or method** *Unclear* **Prioritization criteria** *Criteria:* costs, burden of the disease, importance to stakeholders, patient centeredness, alignment with organization's mission, potential value, potential risk from inaction, addresses inequities, feasibility *Final determination method:* unclear **Stakeholders** *Involve nonresearchers:* yes *Composition:* unclear—each institute led by scientific director and supported through advice of institute advisory boards *Identification method:* unclear *Level of engagement:* unclear **Inputs** *Technology or tools:* surveys, focus groups, webinars with live chat box, recorded audio and slide presentations, email, Twitter, teleconferences *Other inputs:* Toolkit for Research Ambassadors (to communicate with research communities); prioritize consultants	**Evaluation** *Method:* N/A *Outcome:* "CIHR is committed to providing Canadians with a clear overview of the strategies and priorities we will be acting on. A performance measurement framework for the 2014–2015 to 2018–2019 strategic plan has been established to report on actual progress made toward implementing this plan over the next five years. This framework is part of a much larger performance measurement strategy for CIHR and is based on the Canadian Academy of Health Sciences research outcomes framework, as well as on other accountability and Parliamentary reporting requirements stipulated by the Government of Canada" ". . . specific areas of research identified by CIHR in consultation with other government departments, partners and stakeholders" **Challenges** Complexity of the health field.

Howard Hughes Medical Institute (HHMI)

HHMI, undated a; HHMI, undated b; Rubin and O'Shea, 2019

Study Details	Gaps	Needs	Prioritization	Impact
Aim: priorities only *Health condition:* physical health—basic biomedical research	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A	**Strategy or method** *Workshop, meeting, conference:* For one of HHMI's research campuses, Janelia, a series of planning	**Evaluation** *Method:* unclear *Outcome:* N/A

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: basic science	*Final determination method:* N/A	*Final determination method:* N/A	workshops was organized to determine initial research areas.	**Challenges**
Funding organization(s): case-study funding organization	**Stakeholders**	**Stakeholders**	*Other:* In 2019, HHMI hosted an open, international competition to decide Janelia's next research area.	N/A
Setting: U.S.	*Involve nonresearchers:* N/A	*Involve nonresearchers:* N/A	**Prioritization criteria**	
Timeline: N/A	*Composition:* N/A	*Composition:* N/A	*Criteria:* other—diversity, equity, and inclusion; discovery science; public engagement; healthy academic ecosystem	
Funding allocation: in fiscal year 2019, U.S. $763 million; in 2013, U.S. $752 million (Viergever and Hendriks, 2016)	*Identification method:* N/A	*Identification method:* N/A	*Final determination method:* expert determination—applications evaluated by scientists and semifinalists reviewed by HHMI scientific leadership and final advisory panel	
	Level of engagement: N/A	*Level of engagement:* N/A	**Stakeholders**	
	Inputs	**Inputs**	*Involve nonresearchers:* no	
	Technology or tools: N/A	*Technology or tools:* N/A	*Composition:* patients and the public, researchers; funders—HHMI scientific leadership and final advisory panel	
	Other inputs: N/A	*Other inputs:* N/A	*Identification method:* N/A	
			Level of engagement: N/A	
			Inputs	
			Technology or tools: N/A	
			Other inputs: HHMI invests in "people, not projects." HHMI selects researchers and grantees to support through open competitions.	
			HHMI will assesses the research achievements and prospects for future contributions of the applicant's independent research program. Applications are evaluated by distinguished scientists. Semifinalists provide a brief research presentation to HHMI scientific leadership and the final advisory panel.	

National Institutes of Health (NIH)

Johnston and Sekar, 2019; Myers et al., 2011; National Institute of Mental Health (NIMH), 2019a; NIH, 2016; NIH, 2018; NIH, 2019; NIMH, 2019b; NIMH, 2019c; NIMH, 2020

Study Details	Gaps	Needs	Prioritization	Impact
Aim: priorities only	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Health condition: physical health, psychological health	*Unclear*	N/A	*Researcher-only topic identification:* "strong support for investigator-initiated research"	*Method:* yes
	Gap criteria	**Need criteria**		*Outcome:* "NIH has also promoted more robust
	Criteria: unclear	*Criteria:* N/A		

Study Details	Gaps	Needs	Prioritization	Impact
Topic or focus area: basic science, prevention, treatment, symptom management, diagnosis, assessment, epidemiology, service delivery, models of care, and etiology and risk factors *Funding organization(s):* case-study funding organization *Setting:* U.S. *Timeline:* N/A *Funding allocation:* In fiscal year 2019, the NIH program level was U.S. $39.3 billion. In 2013, it was U.S. $26,081.3 million (Viergever and Hendriks, 2016).	*Final determination method:* unclear **Stakeholders** *Involve nonresearchers:* unclear *Composition:* unclear *Identification method:* unclear *Level of engagement:* unclear **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	*Consult with stakeholders:* NIH decisionmakers seek advice from patient organizations and voluntary health associations. *Review in-progress research:* institutes and centers (ICs) set priorities through strategic planning, annual planning, and periodically reviewing and assessing their research portfolios *Other:* "NIH budget provides an established framework within which priorities are identified, reviewed, and justified." **Prioritization criteria** *Criteria:* burden of the disease—crucial but not the only consideration in aligning NIH's research priorities with public health needs; other—value of permanently eradicating a disease; take advantage of opportunities presented by rare diseases to advance research; enhance nimbleness needed to meet public health needs and capitalize on scientific opportunity *Final determination method:* other—Each of the 27 ICs sets its own priorities and uses different methods; e.g., the National Institute of Mental Health reported using "consensus-based methods," whereas the National Institute of Alcohol Abuse and Alcoholism reported consensus-based methods and input from public, scientists, National Institute of Alcohol Abuse advisory council and working groups. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public—patient organizations and voluntary health associations; researchers: individual researchers and professional societies *Other:* IC advisory councils; Congress and the administration; advisory	bibliometric measures through development of disambiguation tools and a normalized citation metric termed the Relative Citation Ratio. In addition, the agency is considering outside bibliometric approaches, such as those developed by the Eigenfactor® Project." **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
			committee to the NIH director Scientific Management Review Board; and NIH staff *Identification method:* unclear *Level of engagement:* consultation—NIH decisionmakers seek advice from many sources when setting research priorities **Inputs** *Technology or tools:* N/A *Other inputs:* First NIH-Wide Strategic Plan 2016–2020 specifies agency-wide process for setting research priorities, which complements the strategic plans of individual ICs. "Each IC has an advisory council that makes recommendations for IC research priorities and funding decisions. The IC advisory councils are made up of both scientific and public representatives, who may have expertise, interest, and other affilia-tions relevant to the IC's mission." "Division of Program Coordination, Planning, and Strategic Initiatives identifies important areas of emerging scientific opportunity or rising public health challenges to assist in the acceleration of research investments in these areas." "According to the agency, decisionmakers at NIH seek advice from many groups when setting research priorities, including scientific researchers and professional science societies, patient organizations and voluntary health associations, IC Advisory Councils, Congress and the administration, the Advisory Committee to the NIH Director, the Scientific Management Review Board, and NIH staff."	

Study Details	Gaps	Needs	Prioritization	Impact

U.S. Department of Defense, Congressionally Directed Medical Research Programs (CDMRP)

Arcidiacono et al., 2018; Burgelman, Chloupkova, and Wobbe, 2014; Committee on the Evaluation of Research Management, 2016; Institute of Medicine, 2004; Lidie et al., 2015; Lovalekar et al., 2018; Mendez, 2018; Poropatich, 2017; Riggs, 2018; National Research Council, 2005; U.S. Army Medical Research and Materiel Command, 2017

Study Details	Gaps	Needs	Prioritization	Impact
Aim: gaps and priorities *Health condition:* physical health, psychological health *Topic or focus area:* prevention, treatment *Funding organization(s):* case-study funding organization *Setting:* U.S. *Timeline:* greater than 12 months to 18 months *Funding allocation:* in 2016, almost U.S. $1.5 billion; in 2012, U.S. $409 million (Viergever and Hendriks, 2016)	**Strategy or method** *Literature review:* CDMRP program manager reviews current scientific landscape for the health condition, which may include literature review. *Quantitative methods:* Program manager may request that the contractor survey the programmatic panel members to collect information about research gaps and the funding landscape, which may be included in vision-setting meeting. *Workshop, meeting, conference:* stakeholder meeting to discuss current research landscape and knowledge gaps *Review in-progress research:* Program manager may attend interagency meetings, consult with other government and NGOs. *Review source materials:* presentations on congressional intent of funding *Other:* "vision setting" to identify research gaps and define an investment strategy to address gaps **Gap criteria** *Criteria:* unclear *Final determination method:* expert determination—Program manager and programmatic panel contractor conduct a teleconference with the chair of the panel; program manager and panel chair discuss topics and ideas to be covered during stakeholder meeting. **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians, product makers, industry, researchers	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Review in-progress research* *Other:* Investment strategy recommendations developed by the programmatic panel. **Prioritization criteria** *Criteria:* potential value—"high impact"; other—relevant to military and their families, "innovative" *Final determination method:* expert determination—Investment strategy recommendations reviewed by CDMRP program manager, U.S. Army Medical Research Acquisition Activity contract officer, and the commanding general of the U.S. Army Medical Research and Materiel Command. **Stakeholders** *Involve nonresearchers:* yes *Composition:* • patients and the public—"Consumers are engaged at all levels of the CDMRP process, from obtaining appropriations from Congress for new and existing programs and establishing a vision for a program to reviewing applications for scientific merit and programmatic relevance. This level of consumer engagement is distinctive among government research funding agencies." • researchers—unclear—CDMRP program managers try to obtain input from all "relevant stakeholders." *Identification method:* other—Program manager with assistance from a contractor identifies and recruits. *Level of engagement:* coproduction **Inputs** *Technology or tools:* N/A *Other inputs:* For selection of	**Evaluation** *Method:* yes *Outcome:* In 2014, the Senate Committee on Appropriations directed DoD to contract with the National Academies of Sciences, Engineering, and Medicine to conduct a study of CDMRP's research management. The committee focused on CDMRP processes used to select applications for funding from the research programs. Concluded review processes for applications for funding are effective in allocating funding for each research program but recommended areas for improvement—development of strategic plans, enhanced coordination with other organizations, better transparency, and more standardization. Areas lacking transparency (i.e., stakeholder meetings, contractor support activities and policies, use of ad hoc and specialty reviewers, and feedback from programmatic reviewers). Emphasized no external evaluation of whether the CDMRP process results in "Innovative and impactful research."

Study Details	Gaps	Needs	Prioritization	Impact
	Other: other federal agencies and nongovernmental organizations		applications for funding, each research program has one programmatic panel and at least one peer review panel; both contain scientist and consumer reviewers. Panels may also include ad hoc and specialty reviewers.	**Challenges**
	Identification method: other—CDMRP program manager with help of the programmatic review contractor identifies, recruits, and convenes stakeholders			Lack of strategic plan results in research programs needing to establish priorities each year, making it difficult to track progress.
	Level of engagement: consultation			
	Inputs			
	Technology or tools: N/A			
	Other inputs: For a new research program, a stakeholders' meeting is convened prior to the start of the application review process. The purpose of the stakeholder meeting is to "survey the research landscape and identify gaps in both the scientific and consumer interest areas." This is usually one-time meeting; additional stakeholders meetings are infrequent and typically are "state of the science" meetings.			
	Premeeting: The CDMRP program manager may need to query congressional staff for clarification of intent of the annual congressional appropriation language that funds and, in some cases, specifies the scientific focus of the research program.			
	Postmeeting: The program manager may also conduct an assessment of panel members to ensure that there are no issues or gaps in representation, which is then given to the contractor for action.			

NOTE: The descriptions in this table and the others in this appendix were adapted from information in the indicated source documents.

Table E.2. Evidence Table: Health Research Funding Organizations Outside North America

Study Details	Gaps	Needs	Prioritization	Impact
National Health and Medical Research Council (Australia)				
Jorm, 2018; Frazer, 2018; Knowledge Sector Initiative, 2019; Medical Research Future Fund, 2021; NHMRC, 2006; NHMRC, 2019a; NHMRC, 2019b; NHMRC, 2019c; Saunders et al., 2007				
Aim: needs and priorities *Health condition:* physical health, psychological health *Topic or focus area:* basic science, prevention, treatment, symptom management, diagnosis, assessment, epidemiology, delivery, models of care, and etiology and risk factors *Funding organization(s):* case-study funding organization *Setting:* other country—Australia *Timeline:* N/A *Funding allocation:* in 2013, U.S. $777.6 million (Viergever and Hendriks, 2016)	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** Stakeholders select outcomes, topics, questions, and prioritization criteria. Targeted Call for Research (TCR) can be identified through the following channels: NHMRC chief executive officer (CEO) and/or Australian Government; council, principal committees, and/or working committees of NHMRC; states and territories through the Australian Health Ministers' Advisory Council; and community and professional groups through the Community Research Priorities Portal. **Need criteria** *Criteria:* burden of the disease; potential value—potential to greatly advance our understanding of an issue; other—link to national, state and territory and/or community priorities, including research that has the potential to provide better health outcomes for Aboriginal and Torres Strait Islander peoples; improve health outcomes for individuals and/or community; contribute to the global research effort *Final determination method:* open-ended listing **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public, clinicians; policymakers—states and territories through the Australian Health Ministers' Advisory Council researchers; funders *Identification method:* other—online portal for community input *Level of engagement:* collaboration	**Strategy or method** *Other:* assessment by TCR Prioritization Committee and Research Committee, NHMRC Council and CEO **Prioritization criteria** *Criteria:* other—research translation; likely outcomes of funding the TCR; disease status and research need *Final determination method:* other—The working committee prioritizes ideas for TCRs using predefined criteria **Stakeholders** *Involve nonresearchers:* yes *Composition:* patients and the public—the NHMRC Council includes a person with expertise in consumer issues; researchers; funders *Identification method:* other—NHMRC staff, committees, and council *Level of engagement:* coproduction **Inputs** *Technology or tools:* N/A *Other inputs:* description provided by NHMRC—The NHMRC Act requires the CEO to identify major national health issues likely to arise during the period covered by the corporate plan. In considering these issues, the CEO consults with the council, the principal committees and the Minister for Health before determining the issues that are within NHMRC's scope. These major health issues represent NHMRC's strategic priorities. They are addressed through NHMRC's strategy for health and medical research and key activities, and are informed by	**Evaluation** *Method:* N/A *Outcome:* N/A **Challenges** N/A

Study Details	Gaps	Needs	Prioritization	Impact
		Inputs *Technology or tools:* community groups (NGOs, advocacy organizations) asked to generate ideas for TCRs through an online portal in the NHMRC *Other inputs:* N/A	expert advice through drawing on scientific expertise and evidence, including the advice of principal committees and other fora, to identify key interventions. In alignment with NHMRC's Corporate Plan, strategic and leveraging grants are designed to support research that addresses identified national needs. This includes the TCR scheme and a dedicated funding stream for clinical trials and cohort studies. It also includes such schemes as centers of research excellence, development grants, international collaborative schemes, and Partnerships for Better Health (Partnership Centres and Partnership Projects). The TCR scheme is designed to stimulate research or build research capacity in a particular area of health and medical science to the benefit of Australians. TCRs provide a mechanism to respond to emerging research needs and prioritize potential topics according to relative urgency and impact. NHMRC has developed an online portal where community and professional groups are able to suggest topics for possible research into specific health issues. NHMRC evaluates these proposals and develops calls for research applications for the highest priority areas. Structural priorities for our flagship grant schemes (Investigator Grant, Ideas Grant, Synergy Grants, and Clinical Trials and Cohort Studies) are set annually to fund areas of need through the advice of principal committees. This is additional funding set aside to support research that is assessed as fundable through competitive peer review, but the allocated funding for that program has been expended.	

214

Study Details	Gaps	Needs	Prioritization	Impact

EU Commission European Medical Council

Bopp et al., 2018; Cartier et al., 2018; European Council, 2019; Fondation Sciences Citoyennes, 2014; Hanney et al., 2010; League of European Research Universities, 2018; MRC, 2018; Shergold and Grant, 2008

Study Details	Gaps	Needs	Prioritization	Impact
Aim: priorities only	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Health condition: physical health, psychological health	N/A	N/A	Unclear	*Method:* N/A
	Gap criteria	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: basic science, prevention, treatment, symptom management, diagnosis, assessment, epidemiology, service delivery, models of care, and etiology and risk factors	*Criteria:* N/A	*Criteria:* N/A	*Criteria:* unclear	**Challenges**
	Final determination method: N/A	*Final determination method:* N/A	*Final determination method:* unclear	N/A
	Stakeholders	**Stakeholders**	**Stakeholders**	
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A	*Involve nonresearchers:* unclear	
	Composition: N/A	*Composition:* N/A	*Composition:* unclear	
Funding organization(s): case-study funding organization	*Identification method:* N/A	*Identification method:* N/A	*Identification method:* unclear	
	Level of engagement: N/A	*Level of engagement:* N/A	*Level of engagement:* unclear	
	Inputs	**Inputs**	**Inputs**	
Setting: other country—Europe	*Technology or tools:* N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
	Other inputs: N/A	*Other inputs:* N/A	*Other inputs:* The EC works closely with its institutional partners the European Council and European Parliament for priority setting in health research.	
Timeline: N/A				
Funding allocation: European Research Council—in 2013, U.S. $783.4 million (Viergever and Hendriks, 2016)				

Institut Pasteur

Institut Pasteur, 2019a; Institut Pasteur, 2019b

Study Details	Gaps	Needs	Prioritization	Impact
Aim: priorities only	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Health condition: physical health	N/A	N/A	Unclear	*Method:* N/A
	Gap criteria	**Need criteria**	**Prioritization criteria**	*Outcome:* N/A
Topic or focus area: basic science, treatment, diagnosis, assessment, epidemiology, service delivery, and models of care	*Criteria:* N/A	*Criteria:* N/A	*Criteria:* unclear	**Challenges**
	Final determination method: N/A	*Final determination method:* N/A	*Final determination method:* unclear	
	Stakeholders	**Stakeholders**	**Stakeholders**	
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A	*Involve nonresearchers:* unclear	
Funding organization(s): case-study funding organization	*Composition:* N/A	*Composition:* N/A	*Composition:* unclear	
	Identification method: N/A	*Identification method:* N/A	*Identification method:* unclear	
	Level of engagement: N/A	*Level of engagement:* N/A	*Level of engagement:* unclear	
Setting: other country—France	**Inputs**	**Inputs**	**Inputs**	
	Technology or tools: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	
Timeline: N/A	*Other inputs:* N/A	*Other inputs:* N/A	*Other inputs:* Scientific priorities will also be set within the Institut Pasteur	

Study Details	Gaps	Needs	Prioritization	Impact
Funding allocation: in 2013, U.S. $220.9 million (Viergever and Hendriks, 2016)			International Network, with the aim of boosting its impact.	

Medical Research Council (United Kingdom)

Academy of Medical Sciences, 2017; Cowan, 2015; Medical Research Foundation, undated; MRC, 2012; MRC, 2014

Study Details	Gaps	Needs	Prioritization	Impact
Aim: priorities only *Health condition:* physical health, psychological health *Topic or focus area:* basic science, prevention, treatment, symptom management, diagnosis, assessment, epidemiology, service delivery, models of care, and etiology and risk factors *Funding organization(s):* case-study funding organization *Setting:* other country—Europe *Timeline:* N/A *Funding allocation:* In 2013, U.S. $1,321.5 million (Viergever and Hendriks, 2016)	**Strategy or method** N/A **Gap criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** N/A **Need criteria** *Criteria:* N/A *Final determination method:* N/A **Stakeholders** *Involve nonresearchers:* N/A *Composition:* N/A *Identification method:* N/A *Level of engagement:* N/A **Inputs** *Technology or tools:* N/A *Other inputs:* N/A	**Strategy or method** *Other:* researcher-led funding opportunities; MRC strategic funding opportunities **Prioritization criteria** *Criteria:* other—"MRC places priority on discovery science that is likely to make a difference to clinical practice and improve human health" *Final determination method:* unclear **Stakeholders** *Involve nonresearchers:* unclear *Composition:* unclear *Identification method:* unclear *Level of engagement:* unclear **Inputs** *Technology or tools:* N/A *Other inputs:* MRC launched a pilot program, "MRC Big Ideas," to capture community-led ideas to inform the development of future research strategy.	**Evaluation** *Method:* yes *Outcome:* In September 2011, the MRC obtained public consultation on economic impact of research investments by soliciting feedback from experts in the field, medical researchers, members of the public, and representatives from universities, learned societies, and funding agencies. Results from consultation developed in a workshop with presentations from U.S. experts, discussion sessions attended by researchers, representatives from universities, funding agencies, and government. Explored two broad approaches to estimated return on investment from research: macro view (correlated changes in inputs to research and development and growth) and microeconomics view which exams the links between specific research and resulting impacts. It was recommended that MRC encourage new research in this field, given that there has been little to no research in UK aimed at applying these approaches

Study Details	Gaps	Needs	Prioritization	Impact
				to understand better what leads to impact and how to maximize impact.
				MRC uses its own and independent evidence to evaluate long-term impact outcomes and performance against Royal Charter objectives. An important component of evidence is the systematic and structured information gathered from all researchers that have held funding using the researchfish® system.
				Challenges
				N/A

Wellcome Trust
Burke, 2015; Wellcome Trust, 2018

Study Details	Gaps	Needs	Prioritization	Impact
Aim: priorities only	**Strategy or method**	**Strategy or method**	**Strategy or method**	**Evaluation**
Health condition: physical health, psychological health	N/A	N/A	*Literature review:* review of scientific literature	*Method:* N/A
Topic or focus area: basic science, prevention, treatment, symptom management, diagnosis, assessment, epidemiology, service delivery, models of care, and etiology and risk factors	**Gap criteria**	**Need criteria**	*Review source materials:* government reports	*Outcome:* N/A
	Criteria: N/A	*Criteria:* N/A	**Prioritization criteria**	**Challenges**
	Final determination method: N/A	*Final determination method:* N/A	*Criteria:* unclear	N/A
	Stakeholders	**Stakeholders**	*Final determination method:* expert determination—Board of Governors plays an active role as a sounding board during the priority development phase, in addition to being responsible for the final decision.	
	Involve nonresearchers: N/A	*Involve nonresearchers:* N/A		
Funding organization(s): case-study funding organization	*Composition:* N/A	*Composition:* N/A		
	Identification method: N/A	*Identification method:* N/A		
Setting: other country—UK	*Level of engagement:* N/A	*Level of engagement:* N/A	**Stakeholders**	
	Inputs	**Inputs**	*Involve nonresearchers:* unclear	
Timeline: N/A	*Technology or tools:* N/A	*Technology or tools:* N/A	*Composition:* researchers	
Funding allocation: in 2013, U.S. $909.1 million (Viergever and Hendriks, 2016)	*Other inputs:* N/A	*Other inputs:* N/A	*Identification method:* unclear	
			Level of engagement: unclear	
			Inputs	
			Technology or tools: N/A	
			Other inputs: N/A	

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Well-defined, systematic, and transparent processes to identify health research gaps, needs, and priorities are vital to ensuring that available funds target areas with the greatest potential for impact. This report documents a scoping review of published methods used for identifying health research gaps, establishing research needs, and determining research priorities and provides relevant information on 362 studies.

Of the 362 studies, 167 were linked to funding decisionmaking and underwent a more detailed data abstraction process. The authors noted that most studies focused on physical health conditions, but few addressed psychological health conditions. The most frequent method for identifying research gaps, needs, and priorities was to convene workshops or conferences. One-third of studies employed quantitative methods, and nearly as many used the James Lind Alliance Priority Setting Partnerships approach. Other methods included literature reviews, qualitative methods, consensus methods, and reviews of source materials. The criterion most widely applied to determine health research gaps, needs, and priorities was the importance to stakeholders, followed by the potential value and feasibility of carrying out the research. The two largest stakeholder groups were researchers and clinicians. More than one-half the studies involved patients and the public as stakeholders. Very few studies have evaluated the impact of methods used to identify research gaps, needs, and priorities.

This report provides a roadmap of methods used for identifying health research gaps, needs, and priorities, which may help accelerate progress toward validating methods that ensure the effective targeting of funds to meet the greatest areas of need and to maximize impact.

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