

MEASURES OF EFFECTIVE MILITARY PUBLIC HEALTH INTERVENTIONS
IN STABILITY OPERATIONS

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

JACOB W. AARONSON, MC, LTC, USA

D.O., Nova Southeastern College of Osteopathic Medicine, Fort Lauderdale, Florida, 1996
M.S., Johns Hopkins School of Medicine, Baltimore, Maryland, 2009

Fort Leavenworth, Kansas
2011-01

Approved for public release; distribution is unlimited.

REPORT DOCUMENTATION PAGE			<i>Form Approved</i> <i>OMB No. 0704-0188</i>		
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 10-06-2011		2. REPORT TYPE Master's Thesis		3. DATES COVERED (From - To) AUG 2010 – JUN 2011	
4. TITLE AND SUBTITLE Measures of Effective Military Public Health Interventions in Stability Operations			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Jacob W. Aaronson, MC, LTC, USA			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth, KS 66027-2301			8. PERFORMING ORG REPORT NUMBER		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT There is broad consensus that attention to health sector needs plays an important role in addressing the causes of state fragility, whether to avoid conflict, during conflict, or post-conflict. Based on the premise that health-related interventions during stability operations are intended to improve those health sector issues that may affect state fragility, the evidence suggests efforts to reduce child mortality rates are the most beneficial. While health outcome metrics such as the under-five mortality rate are recommended for assessing long-term effectiveness, relatively short-term military health-related interventions are likely best assessed through a shorter-term outcome metric, such as the neonatal mortality rate, and metrics that more directly measure the output of activities known to affect child mortality. These output metrics include: immunization coverage among 1-year-olds, percentage of births attended by skilled health personnel, number and quality of trained doctors and nurses, and percentage of the population using improved drinking-water sources and sanitation facilities. Importantly, these metrics are not reflective of direct-care services; rather they are consistent with fundamental public health interventions. This would suggest that a focus on military public health interventions rather than the historic tendency to provide direct care services are more likely to positively affect the desired strategic end-state.					
15. SUBJECT TERMS Stability operation, measure, metric, outcome, output, health service support, public health, indicator, MOP, MOE, humanitarian assistance, logical framework, fragile state, nation-building, health systems strengthening					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. PHONE NUMBER (include area code)
(U)	(U)	(U)	(U)	106	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: LTC Jacob W. Aaronson

Thesis Title: Measures Of Effective Military Public Health Interventions in Stability Operations

Approved by:

_____, Thesis Committee Chair
Louis A. DiMarco, Ph.D.

_____, Member
MG William D. R. Waff, D.Min

_____, Member
William T. Pugh, MPA

Accepted this 10th day of June 2011 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

MEASURES OF EFFECTIVE MILITARY PUBLIC HEALTH INTERVENTIONS IN STABILITY OPERATIONS, by Lieutenant Colonel Jacob W. Aaronson, 106 pages

There is broad consensus that attention to health sector needs plays an important role in addressing the causes of state fragility, whether to avoid conflict, during conflict, or post-conflict. Based on the premise that health-related interventions during stability operations are intended to improve those health sector issues that may affect state fragility, the evidence suggests efforts to reduce child mortality rates are the most beneficial. While health outcome metrics such as the under-five mortality rate are recommended for assessing long-term effectiveness, relatively short-term military health-related interventions are likely best assessed through a shorter-term outcome metric, such as the neonatal mortality rate, and metrics that more directly measure the output of activities known to affect child mortality. These output metrics include: immunization coverage among 1-year-olds, percentage of births attended by skilled health personnel, number and quality of trained doctors and nurses, and percentage of the population using improved drinking-water sources and sanitation facilities. Importantly, these metrics are not reflective of direct-care services; rather they are consistent with fundamental public health interventions. This would suggest that a focus on military public health interventions rather than the historic tendency to provide direct care services are more likely to positively affect the desired strategic end-state.

ACKNOWLEDGMENTS

First and foremost, I want to express my gratitude to the Creator. He sent me the love of my life, my wife Hadassah. She is truly my bashert (destiny and soul-mate). She is the one who convinced me to pursue this project in the first place, and she is the one who endured the countless hours not spent together during its completion. Without her, I would be an incomplete creation, and unable to fulfill my purpose in this life. To our two youngest children who made the move to Kansas with us this year, Avigayil and Ezra, I can only apologize for the many times they heard, –Abba can't play right now, he has homework." I pledge to do my best to return to them some of that time. To our seven older children, who have continued making their lives without the proximate presence of parents or younger siblings, I offer my love, pride, and appreciation for the independent, and caring young men and women they have become. They have been missed, and I look forward to our reunion. May we all be blessed with time spent together.

My sincere thanks to each of my committee members for their interest, direction, contribution, and above all, patience extended. Dr. DiMarco's perpetual guidance and encouragement carried me through this entire process. He quickly grasped the intent of my thesis, was instrumental in defining the shape, scope and structure of the paper, and kept me on course with subtle, but critical –nudges". MG Waff's background and expertise were an important balance to the identification and attendance to core issues. Mr. Pugh's attention to detail and unremitting demand for coherence kept my reasoning focused.

My adviser, Dr. Lowe offered guidance from the initial kernel of an idea, through the development of the prospectus, and the evolution of this paper into its final form.

Despite my statistical naïveté, Dr. Bitters did his best to ensure I did not overstate the limited data analysis. Any gaps or questions regarding the relevance of the data are my responsibility.

To all my instructors, those in my small group, in our seminar group, and in the class as a whole, who over the course of this year, politely tolerated discussion of my thesis, (whether by choice or force of circumstance), please know that you contributed to the growth and refinement of this paper as well. The collective gifts and talents of all these fine people, individually named or not, are represented and reflected in this work. Places where it might miss the mark are solely my province.

I am grateful to the U.S. Army, and the Command and General Staff College for the opportunity to have met, been befriended by, exchanged ideas with, and lived some of my life's moments among, such remarkable human beings. Warmth, intelligence, and personal integrity are basic qualities embodied by the staff and students here. I have been blessed beyond measure, and deeply impacted by this experience.

TABLE OF CONTENTS

	Page
MASTER OF MILITARY ART AND SCIENCE THESIS APPROVAL PAGE	iii
ABSTRACT.....	iv
ACKNOWLEDGMENTS	v
TABLE OF CONTENTS.....	vii
ACRONYMS.....	ix
ILLUSTRATIONS	x
TABLES	xi
CHAPTER 1 INTRODUCTION	1
Introduction and Background	1
Primary Research Question	3
Secondary Research Questions.....	3
Assumptions.....	3
Limitations	4
Scope and Delimitations	4
Significance of Study.....	5
Summary.....	5
CHAPTER 2 MILITARY HEALTH SERVICES STRATEGY - PRACTICE GAP	8
Introduction.....	8
Definitions and Background	9
Doctrinal Basis for Military Public Health Support in Stability Operations	11
Non-Doctrinal Basis for Military Public Health Support in Stability Operations	15
Lessons Learned and Recommendations	16
Conclusion	21
CHAPTER 3 MILITARY-CIVILIAN PUBLIC HEALTH STRATEGIES GAP	28
Introduction.....	28
Definitions and Background	28
Basis for Civilian Public Health Interventions in Stability Operations	33
Lessons Learned and Recommendations	37
Conclusion	41

CHAPTER 4 MEASURES OF MILITARY PUBLIC HEALTH INTERVENTIONS	46
Introduction.....	46
Definitions and Background.....	46
Measurement Frameworks.....	48
Health Indicators.....	55
State Fragility Indices.....	58
Logical Framework.....	64
Conclusion.....	74
CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS.....	79
Conclusions.....	79
Discussion.....	81
Future Research.....	85
Recommendations.....	87
BIBLIOGRAPHY.....	89
INITIAL DISTRIBUTION LIST.....	89

ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
DoD	Department of Defense
DoDI	Department of Defense Instruction
HIV	Human Immunodeficiency Virus
JP	Joint Publication
MOE	Measures of Effectiveness
MOP	Measures of Performance
NGO	Non-Governmental Organization
U.S.	United States
USAID	United States Agency for International Development
WHO	World Health Organization

ILLUSTRATIONS

	Page
Figure 1. Public Health Intervention across the Spectrum of Conflict	33
Figure 2. Sphere Project Core and Minimum Standards in Humanitarian Response	52
Figure 3. Peace and Conflict Instability Ledger- Neonatal/Infant/Under-Five Mortality Rate	71
Figure 4. Worldwide Governance Indicators: Political Stability and Absence of Violence/Terrorism-Neonatal/Infant/Under-Five Mortality Rate.....	71
Figure 5. WHO Output Metrics-Under-Five Mortality Rate	73
Figure 6. WHO Output Metrics- Infant Mortality Rate	73
Figure 7. WHO Output Metrics- Neonatal Mortality Rate	73
Figure 8. Integrated Planning and Assessment Framework Model.....	84

TABLES

	Page
Table 1. International Organizations Involved in Stability Operations	32
Table 2. Millennium Development Goals Directly Related to Health.....	36
Table 3. Stability Operations Sectors Matrix.....	54
Table 5. Indicators Used by Fragility Indices	59
Table 6. State Fragility Index Comparison Matrix	60
Table 7. Logical Framework: Components and Literature-based Examples.....	66
Table 8. Data description, date range, and source	70
Table 9. Pearson Correlation of Stability Indices and Child Mortality Rates.....	70
Table 10. Pearson Correlation of Child Mortality Rates and Output Measures	72
Table 11. Logical Framework for the Health Sector: Military Public Health Intervention During Stability Operations.....	83

CHAPTER 1

INTRODUCTION

Introduction and Background

In this age of globalization governments recognize that poor population health conditions and health infrastructure are associated with an increased risk of extremist and violent behaviors, and that sustainable security is not possible without addressing critical health factors.¹ The RAND Corporation succinctly states —“Nation-building efforts cannot be successful unless adequate attention is paid to the population’s health.”² The 2008 National Security Strategy describes a vision for a comprehensive health strategy, stating the United States (U.S.) has a —strategic interest in promoting global health,” recognizing the —health of the world’s population has never been more interdependent.”³ What is the role of the military health-related activities in support national security strategies, and what are, or are there, measures of success?

Experiences in Iraq and Afghanistan have illuminated the increasing strategic importance of stability operations across the spectrum of conflict. Department of Defense Instruction (DoDI) 3000.05, *Stability Operations*, elevates the role of stability operations stating —Stability operations are a core U.S. military mission that the Department of Defense shall be prepared to conduct with proficiency equivalent to combat operations.”⁴ The Military Health System likewise redefines the expected role for health services support in stability operations in DoDI 6000.16, *Military Health Support for Stability Operations*, stating —military health support for stability operations is hereafter referred to as medical stability operations,” emphasizing —[medical stability operations] shall be given priority comparable to combat operations and be explicitly addressed and

integrated across all [Military Health System] activities.”⁵ While but one dimension of stability operations, it is expected that the military will remain fully engaged globally for the foreseeable future . . . in assisting to stabilize, secure, transition and reconstruct weak, failing and failed states.”⁶

Most military health services-related efforts in support of stability operations have, in practice, primarily focused on short term direct care efforts that have not demonstrated long term benefit.⁷ There is broad consensus that measures of effectiveness are lacking; most measures are performance-oriented and not linked to long-term outcomes. The measure of success, in effect, determines the type of intervention. This begs the question whether military health services-related interventions should, rather than focusing on direct care, be directed to support public health measures that are preventive in nature and support long term sustainability. Stability operations are now considered a core mission, and the Army Medical Department “must understand the important role it plays in influencing policy makers and supporting national security goals” and be prepared to support the “long-term needs of the host nation”⁸ To understand the true impact of these program, measures of effectiveness need to be designed by senior leaders.⁹

Data supporting the effectiveness of military medical personnel participation in stability operations is limited primarily to shorter term measures of performance. True measures of longer term effectiveness are difficult to construct, primarily because the desired outcome is not well defined, especially in consideration of how it will affect the strategic end-state. The purpose of this paper is to identify the measures of effective military public health interventions during stability operations in an effort to understand

if changes to current practice are necessary in order to positively affect the desired strategic end-state: a stable state.

Primary Research Question

What are the measures of effective military public health interventions during stability operations?

Secondary Research Questions

1. What is the gap between current military public health strategies and those necessary to positively affect stability operations?
2. What is the gap between military and civilian public health strategies intended to positively affect stability operations?
3. Of existing publicly available measures, which are likely to be most useful to assess the impact of military public health interventions during stability operations?

Assumptions

A fundamental assumption for this paper is the belief that the U.S. military, as part of a whole-of-government approach, engages in stability operations to improve the stability of the host nation. It is further assumed that addressing the causes of mortality, specifically child mortality, can help break the cycle of poor health as a cause of state fragility.¹⁰ While a complex assumption, this paper will explore developing theories and supporting evidence as it forms the foundation for this research.

Limitations

Though discussed in some detail in order to offer recommendations, this paper is not intended to analyze in depth any specific health indicators or state fragility indices. While necessary in order to articulate the link between health outcomes and the strategic end-state, health indicators and fragility indices measure complex concepts and any meaningful analysis is well beyond the scope of this paper. A preliminary data analysis is performed, exploring only rough correlation characteristics among outcome measures (child mortality rates) and strategic end-state measures (state fragility indices), and between output measures (status of public health interventions) and health outcomes. A more detailed analysis is not practical given the relatively high level nature of the data and the primary scope of the paper.

Scope and Delimitations

This paper will discuss and distinguish between military medical and public health services in support of stability operations, in the context of Joint operations. Joint doctrine will serve as the primary doctrinal source, with Army sources serving to supplement when there is no Joint equivalent. As necessary, other governmental and civilian public health literature will serve to provide a broad perspective to consider the potential for military health services in support of stability operations.

A baseline set of publicly available health indicators intended to provide a measure of the effectiveness of appropriate military health services-related interventions during stability operations is presented. For each indicator suggested, evidence supporting the reasoning for selection will be provided. A logical framework for planning

and assessment is also presented, supported by recommendations from the current literature.

Finally, as the measures of effective military health services-related interventions during stability operations are identified, a recommendation to consider a more public health-oriented approach will be articulated.

Significance of Study

This study is intended to explore the gap between current military health services-related interventions during stability operations and those that may be more effective to improve the stability of the host nation. It is anticipated that the baseline measures and logical framework presented will provide a basis for planning, aligning, and assessing effective and coordinated military and civilian public health organization interventions during future stability operations.

Summary

The purpose of this study is extend the growing body of research that suggests a positive correlation between the health of the people and the stability of the state, in an effort to determine the role of military health services-related activities during stability operations. To objectively measure the impact of military health-services-related interventions during stability operations it will be necessary to identify readily available and reliably measurable metrics. While it is generally believed that current measures of successful health services-related interventions target performance and not effectiveness, there are no studies that have explored the potential of using publicly available health-related data in the context of the actual military mission, to improve the stability of the

host nation. There are a number of publicly available population-level health indicators and measures of state fragility. It is anticipated that successfully demonstrating a correlation between indicators of population health and state fragility indices will help determine the most appropriate use of military health services resources in stability operations. Such metrics can then be used to inform stability operations planning, assessment, and decision making at the strategic, operational, and tactical levels.

This paper is organized to explore each of the secondary questions over the following three chapters, analyzing the literature and summarizing the findings. Chapter 2 discusses the gap between current military public health strategies and those necessary to positively affect stability operations. Chapter 3 builds on this to determine whether there is a gap, or overlap, between military and civilian public health strategies in an effort to understand how best to achieve unity of effort. Chapter 4 is an important chapter as it delves into the logic for recommending measures likely to be most useful in assessing the impact of military public health interventions during stability operations as well as a logical framework for planning and assessment. The final chapter will offer a conclusion, discussion of the significance of the findings, recommendations for future research, and an explicit recommendation as to the measures and logical framework most useful for assessing effective military public health interventions during stability operations.

¹Jeffery C. Reynolds and Kent B. Hughes, “Contagion and Stability” (U.S. War College, Center for Strategic Leadership, Issues Paper 5-01, May 2001), <http://www.csl.army.mil/usacsl/Publications/CSL%20Issue%20Paper%205-01.pdf> (accessed 24 October 2010), 1.

²Seth G. Jones et al., *Health System Reconstruction and Nation-Building* (RAND Corporation, Center for Domestic and International Health Security, 2007),

http://www.rand.org/pubs/research_briefs/2007/RAND_RB9237.pdf (accessed 11 May 2011), 1.

³The White House, *National Security Strategy* (Washington, DC: Government Printing Office, May 2010), 49.

⁴Department of Defense, Instruction (DoDI) 3000.05, *Stability Operations* (Washington DC: Government Printing Office, 2009), 2.

⁵Department of Defense, Instruction (DoDI) 6000.16, *Military Health Support for Stability Operations* (Washington DC: Government Printing Office, 2010), 1.

⁶Association of the United States Army, *The U.S. Army's Role in Stability Operations* (Institute of Land Warfare, Torchbearer National Security Report, October 2006), <http://www.ausa.org/publications/torchbearercampaign/tnsr/Documents/TB-StabOps.pdf> (accessed 14 May 2011), 5.

⁷Jeff Drifmeyer and Craig Llewellyn, "Forward More Effective Humanitarian Assistance," *Military Medicine* 169, no. 3 (2004), <http://www.proquest.com.lumen.cgsccarl.com/> (accessed 25 November 2010), 164; Bruno Himmler, "Humanitarian Assistance and Capacity Development: Unifying Efforts of DoD and the Civilian Community," *Peacekeeping and Stability Operations Institute (PKSOI) Bulletin*, 2, no. 3 (2010), http://pksoi.army.mil/PKM/publications/bulletin/volume2issue3/Bulletin_Volume2_issue_3.pdf (accessed 14 May 2011), 11; Paul W. Pruden, "Should Medical Humanitarian and Civic Assistance Activities Focus on Building Public Health Capacity in Africa to Better Influence Theater Security Cooperation Objectives?" (Thesis, Naval War College, 2006), <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA463935&Location=U2&doc=GetTRDoc.pdf> (accessed 14 December 2010), 17; Edward L. Bryan, "Medical Engagement: Beyond the MEDCAP" (Monograph, School of Advanced Military Studies, U.S. Army Command and General Staff College, 2008), <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA485508> (accessed 14 December 2010), 33.

⁸Kimberly K. Armstrong, "Army Medical Department Support to Stability Operations" (Strategy Research Project, U.S. Army War College, 2007), <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA469380> (accessed 15 May 2011), 18.

⁹*Ibid.*, 19.

¹⁰William Newbrander, *Providing Health Services in Fragile States* (Arlington, VA, USA: Basic Support for Institutionalizing Child Survival (BASICS) for the United States Agency for International Development (USAID), 2006), http://www.basics.org/indexpre_docs/Providing_Health_Services_in_Fragile_States_Newbrander_Final.pdf (accessed 15 May 2011), 4.

CHAPTER 2

MILITARY HEALTH SERVICES STRATEGY - PRACTICE GAP

Introduction

To determine what the measures of effective military public health interventions during stability operations are, an understanding of the gap between current military public health strategies and those considered to positively affect stability operations must be achieved. While there is no doctrinal source dedicated to public health support, public health-related activities are encompassed under the umbrella of health service support. Current strategies are primarily founded in doctrine, though current practice must be considered as well. From the tactical to strategic levels, across the full spectrum of conflict, the Army operates in a Joint environment. Health service support likewise integrates services jointly across the spectrum of care. Thus, referenced doctrine includes primarily Joint and Department of Defense (DoD) level publications. This chapter defines stability operations and the concept of a fragile state, considers the doctrinal basis for and current practice of military health service support in general, and specifically in stability operations, lessons learned, and what the literature suggests are necessary actions to positively affect stability operations. While it is recognized that ~~“health service support”~~ is the doctrinally correct term, throughout this chapter, the term ~~“health service support,”~~ ~~“military health support”~~ and ~~“military health services-related”~~ will be used interchangeably, transitioning eventually to include the use of the term ~~“public health-related”~~ to reflect the military public health aspect of health service support.

Definitions and Background

Stability operations are defined as “various military missions, tasks, and activities conducted outside the United States in coordination with other instruments of national power to maintain or reestablish a safe and secure environment, provide essential governmental services, emergency infrastructure reconstruction, and humanitarian relief.”¹ Stability operations objectives include the restoration of services such as water, sanitation, public health, and essential medical care. From a health sector perspective, the desired military end-state should be host nation capacity to provide vital health services.²

To provide the context for a discussion of the role of military public health in stability operations, the concept of a “fragile state” must be understood. Based on United States Agency for International Development’s (USAID) 2005 Fragile States Strategy, draft JP 3-07, *Stability Operations*, describes a fragile states framework that encompasses a spectrum of failed, failing, and recovering states that is predicated on the concept that a fragile state “suffers from institutional weaknesses serious enough to threaten the stability of its central government.” Stability operations are most often conducted in fragile state or regions, and are intended to promote recovery. The health of the population (public health) is but one of many drivers of conflict and instability that need to be considered when assessing the causes and resolutions of conflict or crisis.³

Within the integrated approach to stability operations described in draft JP 3-07 there are five DoD stability functions that complement the five Department of State Office of the Coordinator for Reconstruction and Stabilization stability sectors, each aligned to an end-state (table 3). Of these, humanitarian assistance is the most directly related to public health. Humanitarian assistance programs are intended to meet the basic

human needs of the host nation and are expected to positively affect the population's social well-being. Such programs are generally categorized by civilian development agencies into emergency humanitarian and disaster assistance, shorter-term transition initiatives, and longer-term development assistance, paralleling the military approach of initial response activities, transformational activities, and activities that foster sustainability.⁴

The scope of humanitarian assistance participation by U.S. Armed Forces is generally described within the context of foreign humanitarian assistance and nation assistance. Foreign humanitarian assistance includes support to the host nation in the event of a disaster or catastrophe (natural, man-made, or otherwise endemic), including relief to the affected population during or following combat operations. Nation assistance generally describes those programs intended to positively impact the long-term capacity of the host nation by attending to the ~~h~~health and well-being of its populace.”

Humanitarian assistance programs, as part of nation assistance, are normally conducted in the form of humanitarian and civic assistance or military civic assistance action. While humanitarian and civic assistance programs provide direct humanitarian assistance, military civic assistance action programs are a tool to train indigenous forces to do so.⁵ This general frame, those activities that are consistent with humanitarian assistance, will provide the context for discussing the doctrinal basis for health service support in stability operations.

From a Joint perspective health service support is defined as ~~a~~ll services performed, provided, or arranged to promote, improve, conserve, or restore the mental or physical well-being of personnel.”⁶ This is Jointly termed ~~f~~orce health protection.”

Force health protection is the primary mission of health service support; to enable a healthy and fit [U.S.] force, prevent injury and illness, and protect the force from health hazards.”⁷ In addition to force health protection, to advance U.S. national goals and objectives, health service support resources may be used in such operations as civil support, foreign humanitarian assistance, and disaster relief.⁸

Doctrinal Basis for Military Public Health Support in Stability Operations

A doctrinally-based pattern defining the role of health service support in stability operations is emerging. The Joint and DoD publications regarding military health service-related activities in stability operations have superseded Army field manuals. Doctrine is maturing based on recent experience in Iraq and Afghanistan. A deeper understanding of the importance of civil-military health service-related operations that extend beyond force health protection has found its way into the most current Joint and DoD publications. Appropriately, international perspectives on health frame the expectations for U.S.-based health service-related activities. JP 3-57, *Civil-Military Operations*, quotes the World Health Organization (WHO) and sets the expectations for military-civil affairs in the health sector, defining the broad context of health as “a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity.” Within that context then, the health sector includes “direct care, disease surveillance and prevention, sanitation, nutrition, potable water, hazardous waste and material management, and consideration of physical and psychological impact of conflict and hardship.” In contrast to what has historically been the core health service support mission, JP 3-57 clearly

states —health sector capacity building should focus on public health and preventive medicine, which are the basis of a strong health sector.”⁹

There are several doctrinally-based terms used to describe health service-related activities that are conducted under the broad scope of humanitarian assistance in support of stability operations: medical stability operations, medical civil-military operations, medical humanitarian civic assistance, foreign humanitarian assistance, and as touched on above, humanitarian and civic assistance and military civic assistance action. While there are other descriptors for such health-related activities, this section will focus on those with a sound doctrinal basis.

Building upon DoDI 3000.05 and other health service support-related doctrine, the most current description of the role for military health services is established as policy in DoDI 6000.16 stating —Military health support for stability operations is hereafter referred to as medical stability operations.” Consistent with the direction given in DoDI 3005.05, —MSOs [Medical stability operations] shall be given priority comparable to combat operations and be explicitly addressed and integrated across all MHS [Military Health System] activities including doctrine, organization, training, education, exercises, materiel, leadership, personnel, facilities, and planning.”¹⁰ To emphasize the importance of this newly described mission, DoDI 6000.16 establishes medical stability operations as a core mission, directing the Military Health System to —be prepared to conduct [medical stability operations] throughout all phases of conflict and across the range of military operations, including in combat and non-combat environments . . . in order to establish, reconstitute, and maintain health sector capacity and capability for the indigenous population when indigenous, foreign, or U.S. civilian professionals cannot do so.”¹¹

In support of foreign humanitarian assistance operations, which are governed by Title 22 of the U.S. Code, health service support missions are threefold: force health protection including preventive medicine; direct public health and acute medical care for disaster victims; and assistance in reestablishing disaster affected host nation public health resources and institutions.¹² Such operations are short term in nature, with no specific intent to promote U.S. security interests.

Related to foreign humanitarian assistance, humanitarian and civic assistance activities, which are governed by Title 10 of the U.S. Code, are performed in conjunction with authorized military operations and include ~~medical~~, surgical, dental, and veterinary care provided in rural or underserved areas of a country, including education, training, and technical assistance related to the care provided.” Humanitarian and civic assistance programs are generally a commitment over the long term, and in contrast to foreign humanitarian assistance operations, intended to promote the security interests of the U.S. and the host nation in which the activities are performed.¹³

Medical civil-military operations in support of the Joint Force Commander ~~establish~~, enhance, maintain, or influence relations between the Joint or coalition force and host nation, multinational governmental and nongovernmental civilian organizations and authorities, and the civilian populace in order to facilitate military operations, achieve U.S. operational objectives, and positively impact the health sector.”¹⁴ Medical civil-military operations span the spectrum of conflict from pre-conflict health-related civil-military activities to post-conflict stability operations. During medical civil-military operations, health service support activities are expected to improve host nation public health and medical services capacity, with an emphasis on long-term programs that are

sustainable by the host nation. The goal of such activities is enhanced host nation legitimacy and force protection, while ultimately supporting the operational political-military objectives. Civil-military medicine, considered a discipline within operational medicine, comprises public health and medical issues that involve coordination between military and civil authorities (foreign or domestic) and include military medical support to domestic civil authorities, medical elements of security cooperation activities, and medical civil-military operations.¹⁵ Medical civil-military operations, while likely targeting health problems in the area of operations, are not normally intended to address short-term curative care, but rather long-term preventive and developmental programs that can be sustained by the host nation.¹⁶

While humanitarian and civic assistance, medical civil-military operations, and now medical stability operations are intended to directly support the military mission within the greater context of a whole-of-government approach across the full spectrum of conflict, foreign humanitarian assistance may be incidentally necessary during military operations, or may, more likely, be an independent operation. There is a maturing doctrinal basis for health service support-related activities during stability operations, extending beyond force health protection. Non-doctrinal (that is, not specifically described in doctrine) military health service-related operations have likewise evolved over several decades, in response to needs identified during a range of military operations. They have been implemented in a variety of settings and are well described in a range of military and civilian literature, as will be discussed next.

Non-Doctrinal Basis for Military Public Health Support in Stability Operations

In addition to those already mentioned, there are many names by which military health service-related activities are identified. These include medical civic assistance programs (also known as medical civic action programs), medical readiness training exercises, medical diplomacy, and cooperative health engagement. While these activities are based in doctrine, they are not specifically referred to in current Joint publications or Army field manuals. Where the previous section describes the doctrinal basis for military health service-related activities in support of stability operations, this section describes the translation into practice.

Funded primarily through the humanitarian and civic assistance program and conducted as peacetime projects with foreign nations, medical civic assistance programs, also known as medical readiness training exercises, are primarily intended to “promote the security of the host nation and the United States and enhance readiness skills of the members of U.S. military medics.” While medical civic assistance programs can be conducted during conflict, post-conflict, or stability operations, providing direct medical treatment to the local host nation population, most commonly a medical civic assistance program is a short term mission (e.g. 2 weeks) to provide acute direct medical care to a rural population in a developing country. Activities include setting up clinics in schools, community centers, local health facilities or tents and providing medical and dental care to as many patients as possible.¹⁷

Medical diplomacy is a term that has been used more recently to describe the encouragement of positive relations between nations and/or share specific benefits by using medical and healthcare resources. The major goals of such “diplomacy” include

inspiring positive public perception, advancing trade relations, and protecting U.S. citizens in the event of potential international health threats. In the short term, medical diplomacy outreach includes disaster and non-disaster relief, while the long term may include exporting personnel, building infrastructure, and providing medical training and education.¹⁸

Cooperative health engagement is a term referring to long-term health outcomes-focused interaction with the host nation intending to increase the overall health capacity. Some believe cooperative health engagement may better capture the intent of cooperative humanitarian operations that are intended to result in long-term health outcomes, as compared to short-term activities such as medical civic assistance programs or medical readiness training exercises that are not concerned with health outcomes in the long-term.¹⁹

Joint doctrine recommendations for, and actual practice of, military health service-related activities in support of stability operations have primarily purposed to support Joint forces at the tactical and operational level, and U.S. interests at the strategic level. While intended to positively impact the host nation as well, documented concerns regarding the true effects of such well-intentioned operations, based on many years of experiences, have resulted in a plethora of articles describing problems and potential solutions.

Lessons Learned and Recommendations

Past medical humanitarian and civic assistance activities achieved very little improvement in public health, primarily because focus “had to be” on U.S. military operational readiness training instead of long-term health benefits for the host nation. An

analysis of such activities during the period 2000 to 2004 found that over 80 percent of those conducted in the European Command area of responsibility included some kind of health-related project, with the majority of effort by the U.S. military providing direct patient care. The author of the study believes the focus on direct patient care, while perhaps providing long-term benefits for a minority of those treated, did not result in the positive impact on public health necessary to bring sustainable security and stability to the region of interest. Over the five year period only five of the fifteen countries received more than one visit, suggesting there was no plan to link successive projects toward long-term improvements in public health.²⁰

With a similar viewpoint, Dr. Jeffrey Drifmeyer and Dr. Craig Llewellyn²¹ suggest that the focus of the majority of military medical humanitarian assistance projects to provide primarily short-term direct patient care has left fundamental problems in medical and public health infrastructure unresolved.²² Dr. Bruno Himmler²³ suggests military doctrine has historically promoted programs such as medical civic assistance programs to “win the hearts and minds of the local populace,” resulting in unintended effects that have been counter-productive, hampering long term capacity development and often leading to host nation dependency.²⁴

A study evaluating 1,887 patient visits during three humanitarian assistance missions conducted by the 48th combat support hospital in Afghanistan found the majority of the patients received care that was unnecessary, was not curative, or was merely supportive in nature. The authors believe the effectiveness of medical care during humanitarian assistance missions cannot be assumed and that future operations should include assessments of outcome.²⁵

Dr. Himmler believes there is a need to ~~shift~~ the focus of effort from providing isolated care for chronic diseases to those efforts that would lead to increased ability of the host nation health care system to care for its people.”²⁶ Though admittedly a regional perspective, a similar viewpoint emphasizes that, rather than focusing on short-term direct patient care, the focus of military health services-related efforts in developing African nations must be to build long-term, resource-aware public health capacity in order to have the (intended) direct effect of improving their nation-state stability, thereby improving regional and worldwide security.²⁷

Based on his experiences, Dr. Robert Wilensky, a battalion medical officer in Vietnam in 1967-1968, identified basic guidelines for military medical support in civilian healthcare programs. His recommendations emphasize that while the U.S. military health service mission remains force health protection first, efforts to improve host nation healthcare capacity should focus on training the local populace to care for themselves and developing infrastructure that is relevant and sustainable.²⁸

Another author contends U.S. military medical engagement goals should be expanded to consider the ~~development~~ of fragile states’ capacity for provision of medical services to local populations”, and that such engagements should be designed to improve the long-term health security of the population in ”medically vulnerable fragile states.” Such an effort should include protecting the interests of the U.S. through the creation and execution of an integrated, whole-of-government strategy toward host nation medical capacity improvement.²⁹ A similar perspective suggests a ~~healthy~~ society is the force that moves the economy in a positive direction rather than the other way around,” and that a ~~lack~~ of adequate public health to protect a population, and the resulting

incidence of infectious disease, has been identified as a considerable vulnerability to a nation's security."³⁰

Authors of the AMEDD Futures Project 2039³¹ predict that the availability of basic health services and infrastructure will be critical to achieving socioeconomic stability, and thus peace, in developing nations. The authors state ~~we~~ "no longer can just show up, build medical infrastructure, and deliver medicine to heal a small minority, and pick up and leave once the immediate issues are resolved." They propose a shift away from specialist driven medical care, advising prevention and public health should be central to the health care delivery and deployment philosophy. The types of health care providers necessary to accomplish this will be ~~pre~~vention and public health oriented, IT and data oriented." The authors further suggest the Army Medical Department be (re) designed to leverage organic knowledge and expertise to ~~de~~velop the basics of public health and transfer that knowledge" to the host nation. Work groups consistently agreed that in a globalized world, ~~h~~umanitarian crises, pandemics and resource shortages will ensure that public health issues present the greatest challenge - and the greatest opportunity for the AMEDD [Army Medical Department] to make a profound contribution."³²

Consistent with DoDI 6000.16, which directs the Commanders of the Geographic Combatant Commands to ~~in~~corporate MSOs into campaign plans; theater security cooperation plans; military training, exercises, and planning, including intelligence campaign plans; and intelligence support plans,"³³ Dr. Himmler believes host nation support (~~bu~~in") will require their involvement during the earliest planning phases. He recognizes the U.S. military will need to minimize direct involvement, instead focusing on better

mentorship, and that clear guidelines based on international standards promoted by the United Nations and WHO will be necessary to determine the end-state and timeline for transition to host nation-sustained capacity.³⁴

In a survey of 215 military personnel from all Services, participants (healthcare providers and managers involved in humanitarian relief projects) identified the need to shift from short term patient care projects to longer term comprehensive, integrated, coordinated civil-military cooperative projects that focus on capacity and capacity-building projects such as public health interventions, medical training, and infrastructure improvements. In other words, shift from individual patient encounters to public health interventions. The study highlighted the fact that the rare publication of project findings are most likely to document process (output) measures such as numbers of patient seen rather than information on outcomes, impact, or effectiveness for its humanitarian, training, or political values. The authors emphasize that the study confirmed widespread recognition that there is a need to implement measures of long-term health outcomes and effectiveness of humanitarian assistance missions.³⁵

The authors contend that the traditionally force health protection-centric mission of military medicine has led to outcomes metrics that are primarily patient-focused, measuring process (e.g. bed occupancy and average stay), and measures of effectiveness that are based on speed and extent of recovery. Only for preventive medicine and research reasons is information gathered over an extended period of time and across populations in order to evaluate population level outcomes. They conclude by recognizing that while few DoD humanitarian missions have measured effectiveness, the need to do so is widely recognized. The authors posit that such constraints as the short-

term nature of most military deployments, the rotational nature of personnel deployments during extended operations, and lack of population-based outcome measures tend to drive measures of process rather than measures of effectively demonstrating long term outcomes.³⁶

Dr. Clunan³⁷ suggests that the failure of military health service-related activities to achieve expected outcomes is due to the often neglected step of regular assessment to determine whether a program is working.³⁸ Other recommendations suggest a country-level strategic plan should include short-term measures of progress like the percentage of the population immunized and long-term health outcome measures like infant mortality and life expectancy.³⁹ A means to align the action and measurement of short-term military health services-related activities to long-term indicators of successfully improving host nation stability are thus critical.

Dr. Himmler suggests the focus of public health capacity development should be related to long term public health concerns as identified in the WHO Millennium Developmental Goals, which focus on those factors that are considered the most significant to preventing morbidity and mortality on a global scale. He further recommends that military health services-related activities address issues related to these goals because the transition to host nation, international agencies, and non-governmental organizations will prove to be a much easier process.⁴⁰

Conclusion

Most military health service-related efforts in support of stability operations have, in practice, primarily focused on short term direct care efforts that have not demonstrated long term benefit. There is consensus that adequate measures of effectiveness are lacking;

most measures are performance-oriented and not linked to long-term outcomes. This may be at least partially due to past directives that limited U.S. military forces' conduct during humanitarian and civic assistance activities, as well as their experience in delivering direct medical care, which is substantially different from the preventive approach that characterizes public health.

According to current Joint doctrine, the primary purpose for military health service support is to maintain the individual and group health needed to accomplish the military mission.⁴¹ In other words, the primary health service support mission is U.S. force(s) health protection. During current and past stability operations, the military has considered the role of military health service support primarily as a means to win the hearts and minds of the local populace. However, Joint doctrine also suggests stability operations objectives are intended to impact the end-state of "indigenous capacity to provide vital health services" and "could include the restoration of services such as water, sanitation, public health, and essential medical care."⁴² In practice, most U.S. military health services-related activities do little to positively affect the underlying health-related problems and infrastructure over the long-term.

It is recognized that the provision of health service support can directly counter not only medical but general threats as well through medical infrastructure development and refinement, assistance with "establishing, repairing, or improving basic health and sanitation services," as well as monitoring health and health risk indicators such as life expectancy and infant mortality rate. It is further expected that military forces should be prepared to lead such efforts initially until transition to host nation, multinational, or international governmental and non-governmental resources is possible.⁴³

There appears to be a gap in the actual practice of military health services-related programs during stability operations and what is recommended in current doctrine. Traditionally military health services-related interventions have been brief and have targeted acute health and health infrastructure problems primarily providing direct patient care, with limited coordination with other civilian public health professionals and organizations to establish fundamental and sustainable improvements in the health sector. While the preponderance of evidence supports the concern that “the quality of health has been repeatedly linked to the stability and security of nations or regions,”⁴⁴ U.S. military health services-related activities in support of stability operations have not demonstrated a positive impact to improve the stability and security in regions of where such operations have been conducted. Joint doctrine has matured to articulate the logic and recommendations for effective public health-centric strategies, but translation into practice continues to lag. There is clearly a consensus-based recommendation to shift from short-term direct medical care operations to those which focus on longer-term public health needs.

The distinction between “medical” and “public health” care may on the surface appear subtle, but though related, they are philosophically and in practice fundamentally at separate ends of the health care spectrum. Further complicating true understanding, the concept of “medical” care is not the same as “health” care. Medical care focuses on the diagnosis and treatment of disease, while health care is premised on a preventive model. In order to make a positive impact on the host nation health sector, the focus of military health services-related efforts will need to shift from mostly short-term direct patient care to long-term public health infrastructure-related efforts consistent with specific host

nation needs and international public health concerns. In order to better understand the actual effect of military health services-related activities, especially as intended to positively impact long-term host nation stability and health outcomes, it will be necessary to effectively measure interventions based on internationally recognized public health standards.

To fully explore the potential role for, and measures of, military public health interventions during stability operations, it is necessary to understand the current practices of civilian public health organizations. This will serve as a comparison between civilian and U.S. military efforts, providing a basis for considering the gap or overlap among activities and the opportunities for integrated and synergistic efforts.

¹Department of Defense, DoDI 3000.05, 1; Chairman, Joint Chiefs of Staff, Joint Publication (JP) 3-07 (Draft), *Stability Operations* (Washington DC: Government Printing Office, 22 April 2010), GL-11.

²Chairman, Joint Chiefs of Staff, Joint Publication (JP) 4-02, *Health Service Support* (Washington DC: Government Printing Office, 2006), xiii.

³JP 3-07, I-10, I-11, II-4.

⁴*Ibid.*, III-3, III-22.

⁵*Ibid.*, III-23, III-24.

⁶JP 4-02, GL 15; Chairman, Joint Chiefs of Staff, Joint Publication (JP) 3-0, *Joint Operations* (Washington DC: Government Printing Office, 2010), GL-15.

⁷JP 4-02, I-3.

⁸JP 3-0, IV-16.

⁹Chairman, Joint Chiefs of Staff, Joint Publication (JP) 3-57, *Civil-Military Operations* (Washington DC: Government Printing Office, 2008), A-C-1, A-C-4.

¹⁰DoDI 6000.16, 1.

¹¹DoDI 6000.16, 2.

¹²Chairman, Joint Chiefs of Staff, Joint Publication (JP) 3-29, *Foreign Humanitarian Assistance* (Washington DC: Government Printing Office, 2009), xxvii.

¹³Department of Defense, Instruction (DoDI) 2205.02, *Humanitarian and Civic Assistance (HCA) Activities* (Washington DC: Government Printing Office, 2008), 8, 2.

¹⁴JP4-02, xiii.

¹⁵*Ibid.*, IV-8.

¹⁶JP3-57, II-16.

¹⁷Douglas Lougee, “Can We Build a Better Medical Civic Assistance Program? Making the Most of Medical Humanitarian Civic Assistance Funding,” *The DISAM Journal of International Security Assistance Management* 29, no. 3 (2007), http://www.disam.dsca.mil/pubs/Vol%2029_1/Lougee.pdf (accessed 14 May 2011), 68.

¹⁸Ogan Gurel, “Medical Diplomacy: A Brief Outline,” Aesis Group Medical Diplomacy Blog, 8 September 2007, <http://www.scribd.com/doc/8057665/Medical-Diplomacy-a-Brief-Outline> (accessed 14 May 2011).

¹⁹Sean Murphy and Dean Agner, “Cooperative Health Engagement in Stability Operations and Expanding Partner Capability and Capacity,” *Military Medicine* 174, no. 8 (1 August 2009), <http://www.proquest.com.lumen.cgscarl.com/> (accessed 14 May 2011), iii, iv.

²⁰Pruden, 17, 9.

²¹Jeffrey Drifmeyer, PhD, MPH and Craig Llewellyn, MD, MPH, director of the Center for Disaster and Humanitarian Assistance Medicine have both written extensively on DoD humanitarian assistance.

²²Drifmeyer and Llewellyn, “Toward More Effective Humanitarian Assistance,” 164.

²³Commander Bruno Himmler, M.D. (U.S. Public Health Service) is the the Health and Humanitarian Assistance Advisor for the Peacekeeping and Stability Operations Institute (PKSOI) at the U.S. Army War College.

²⁴Himmler, 11.

²⁵Alan L Beitler, Jennifer L Junnila, and James H Meyer Jr., “Humanitarian Assistance in Afghanistan: A Prospective Evaluation of Clinical Effectiveness,” *Military Medicine* 171, no. 9 (2006), <http://www.proquest.com.lumen.cgscarl.com/> (accessed 14 May 2011), 889.

²⁶Himmler, 13.

²⁷Pruden, 13,2.

²⁸Robert J. Wilensky, *Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War* (Lubbock: Texas Tech University Press, 2004), 139.

²⁹Bryan, iii, 14, 43.

³⁰Pruden, 3, 6.

³¹The AMEDD Futures Project 2039, phase II of which was published in June 2009, forecasts the impact of fourteen health trends that are thought likely to become increasingly important to Army Medical Department missions, capabilities, and performance by 2039.

³²Institute for Alternative Futures, “The AMEDD [Army Medical Department] Futures Project 2039: Phase 2 Final Report,” 30 June 2009, http://www.altfutures.org/pubs/govt/AMEDD_Futures_2039_Project_072909.pdf (accessed 14 May 2011), 219, 220, 5.

³³DoDI 6000.16, 5.

³⁴Himmler, 14.

³⁵Jeff Drifmeyer and Craig Llewellyn. *U.S. Participants Perspectives on Military Medical Humanitarian Assistance* (Measures of Effectiveness, Centers for Disaster and Humanitarian Assistance Medicine (CDHAM) publication 02-04, 2004), <http://odhap.cdham.org/> (accessed 13 December 2010), 2, 7.

³⁶Drifmeyer and Llewellyn, “Toward More Effective Humanitarian Assistance,” 166.

³⁷Anne L. Clunan, Ph.D. is associate professor of National Security Affairs at the Naval Postgraduate School in Monterey, CA and works with the Center for Stabilization and Reconstruction Studies on the problems militaries and humanitarian organizations face in managing complex humanitarian emergencies.

³⁸Anne L. Clunan, ed., “Civil-Military Medicine: On Dangerous Ground” (Monterey, CA: Center for Stabilization & Reconstruction Studies, Naval Postgraduate School, March 2006), http://www.csrns-nps.org/logistica/public/docs/game_report.pdf (Accessed 14 May 2011), 69.

³⁹Pruden, 14.

⁴⁰Himmler, 12.

⁴¹JP 4-02, I-2.

⁴²Ibid., IV-2.

⁴³Ibid., IV-9.

⁴⁴Clunan, 38.

CHAPTER 3

MILITARY-CIVILIAN PUBLIC HEALTH STRATEGIES GAP

Introduction

Given the doctrinal expectations that military forces should be prepared to initially lead stability operations efforts intended to positively impact the indigenous health sector capacity until transition to host nation, multinational, or international governmental and non-governmental resources is possible, an understanding of the civilian perspective is necessary. This chapter will explore public health activities and programs conducted by civilian agencies and organizations before, during, and after stability operations. A comparison between civilian and U.S. military health-related efforts will provide a basis for considering the gap or overlap among activities and the opportunities for integrated and synergistic effort. This analysis will help to determine the measures of effective military public health interventions are during stability operations.

Definitions and Background

To appropriately frame the discussion, attention to some important definitions is necessary. Many of these definitions continue to evolve, variably depending on the perspective; they may often be somewhat different if civilian or military, domestic or international. The concepts of a fragile state, nation-building vs. state-building, capacity-building, health system, and health systems strengthening will be discussed, as well as an introduction to the major civilian organizations providing health-related humanitarian support.

The World Bank considers a fragile state as one that is unable to provide basic services as a result of either lack of capacity or political will, or both, and defines a fragile situation as one characterized by a combination of weak governance, weak policies and weak institutions.”¹ William Newbrander, Ph.D.² describes that many post-conflict countries considered to be fragile states demonstrate a lack of governmental legitimacy and are unable to provide basic services and security.³ Nigel Pearson, M.D.⁴ defines a stable, or resilient, state as one that has political legitimacy resulting from the capacity of a state to effectively perform key functions.”⁵

Seth Jones, Ph.D.⁶ defines nation-building as efforts carried out after major combat to underpin a transition to peace and democracy.”⁷ Such efforts involve the deployment of military forces, and are intended be based on a whole of government approach to rebuild the host nation across all sectors including health, security, economic, and political. When referring to U.S. participation, the term nation-building often involves military operations somewhere along the spectrum of conflict. James Dobbins,⁸ who points out the term is mostly U.S.-centric, considers nation-building to involve the use of armed force as part of a broader effort to promote political and economic reforms, with the objective of transforming a society emerging from conflict into one at peace with itself and its neighbors.”⁹

In comparison to nation-building, Dr. Pearson describes state-building as the continuous process of bringing about resilience, manifested by increased legitimacy and effectiveness (state willingness, capacity and accountability).”¹⁰ The Max Planck Yearbook of United Nations Law refers to state-building as the establishment, re-establishment, and strengthening of a public structure in a given territory capable of

delivering public goods.”¹¹ The authors go on to make a distinction between nation-building as an “indigenous process of identity formation” and state building as “the erection of public institutions.” They point out however that while these distinctions are largely a reflection of policy objectives, both processes (nation- and state-building) are components of post-conflict rebuilding.¹² While this chapter primarily refers to state-building, reflecting more of an international perspective, it is understood that both terms reflect the concept of rebuilding state capacity.

Capacity-building, considered an aspect of state-building, refers to the process of creating policy, institutions and performance within specific functions of a state.¹³ The goal of capacity-building is to establish the optimal and operational combination of resources, skills, support systems, and tools appropriate for selected functions.¹⁴ One such function within a state is the health system.

According to the WHO, a health system “consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health,” whose efforts include direct activities to improve health as well as those that indirectly influence determinants of health such as education, the physical environment, and health services.¹⁵ The health system is expected to provide a spectrum of interventions to include preventive, curative, and rehabilitative through combined public health and direct health care actions.¹⁶ The World health report 2000 described the overall outcomes or goals of a health system as “improving health and health equity” in ways that “make the best, or most efficient, use of available resources.”¹⁷

Health systems strengthening is defined as “any array of initiatives and strategies that leads to better health through improvements in one or more of the health system’s

functions measured by increased access, coverage, quality, or efficiency,” with sustained and measurable improvements beyond donor assistance.¹⁸

There are many international health organizations providing health systems strengthening during stability operations. They can be grouped according to their function (those providing long-term health care and those providing refugee and disaster relief) and according to their structure (multilateral, bilateral, and non-governmental organizations (NGOs)). There are around 65 multi-and bilateral international health agencies, and nearly 1,500 NGOs world-wide. Multilateral agencies are funded from multiple government and non-governmental sources and distribute resources to many different countries. Bilateral agencies are governmental agencies in a single country that provide aid to developing countries. NGOs, sometimes referred to as private voluntary organizations, are comparatively small, mostly church-affiliated, and provide nearly 20 percent of all external health aid to developing countries, primarily through direct support to long-term health care and refugee and disaster relief needs internationally. Compared to the expected long-term nature of international humanitarian health-related efforts, conditions that require disaster and relief organization intervention, such as earthquakes and floods, most often develop over hours and days with little if any warning. Refugee crises, on the other hand, tend to develop over a much longer period and are often preceded by indicators of impending emergency.¹⁹ See table 3 for a summary of the most active multilateral, bilateral, and non-governmental organizations providing health systems strengthening during stability operations.

Table 1. International Organizations Involved in Stability Operations			
Organization	Background	Long-Term Health Care	Refugee and Disaster Relief
Multilateral Agencies (All listed are U.N.)	Funded from multiple governments and non-governmental sources and distribute resources to many different countries.		
World Health Organization	Premier international health organization.	X	X
World Bank	Heavily involved in international health – loans for human resources development.	X	
United Nation Development Programme	Major health concerns include AIDS, maternal and child nutrition, and excessive maternal mortality.	X	X
United Nation Children's Fund	Top priority is children younger than five years of age in the world's poorest countries.	X	X
World Food Programme	Provides food relief directly, coordinates NGO's, and provides logistical support.		X
UN High Commissioner for Refugees	Major international organization for refugees world-wide. Provides international protection while seeking long-term solutions.		X
Food and Agriculture Organization	Focuses efforts on helping developing countries with famine preparations.		X
Bilateral Agency	Governmental agency in a single country that provides aid to developing countries.		
United States Agency for International Aid	Provides U.S. economic and humanitarian assistance worldwide.	X	X
Non-Governmental Organizations (NGO)	Comparatively small, mostly church-affiliated, providing mostly direct support to long-term health care and refugee and disaster relief needs internationally.		
Oxfam International	International confederation of 15 organizations – seeks “lasting solutions to poverty and injustice”.	X	
International Federation of the Red Cross and Red Crescent Societies	World's largest humanitarian organization.		X
Medecins Sans Frontieres	Provides direct medical care to populations in distress, victims of natural or man-made disasters, and victims of armed conflict.		X
CARE (USA and International)	Focus on women – specializes in food relief.		X
Catholic Relief Services	Specialize in providing food relief.		X

Source: Compiled by the author, International Medical Volunteers Association, “The Major International Health Organizations,” <http://www.imva.org/Pages/orgfrm.htm> (accessed 14 May 2011).

Basis for Civilian Public Health Interventions
in Stability Operations

Whether providing long-term health care as part of an intentional state-building effort, or in response to natural disaster, these activities most often take place in states within the fragile states spectrum (see figure 1).

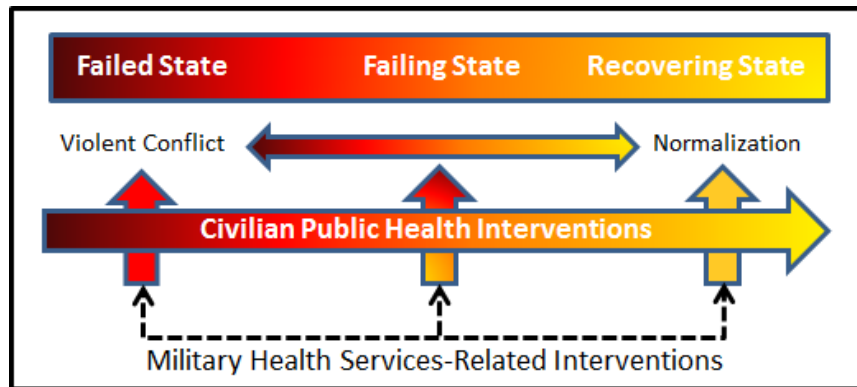


Figure 1. Public Health Intervention across the Spectrum of Conflict
Source: Created by the author, adapted from the Failed States Framework (draft), Chairman, Joint Chiefs of Staff, JP 3-07, *Stability Operations* (Washington, DC, 22 April 2010), I-11.

From a humanitarian perspective, the international community is concerned about fragile states for several reasons. With almost 50 states considered as fragile, the magnitude of the problem is significant. Nearly one-third of the world's poor reside in fragile states and one-quarter of global aid is focused on fragile states. Fragile states are at high risk for communicable disease outbreaks; lacking the treatment, prevention, and containment capacity and resources, there is an increased likelihood of rapid spread internationally. The burden of disease and the rate of mortality in fragile states are disproportionately high. Fragile states account for more than one-third of the maternal

deaths, one-half the of deaths in children under five years of age, one-third of the population living with human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), and for malaria deaths that exceed developing countries by over thirteen fold.²⁰

These extraordinarily high mortality and disease rates are considered contributory to state fragility. Addressing the causes of mortality and disease can help break the cycle of poor health, provide a basis for considering the relationship among health, political, economic, and social contributions to fragility, can serve as a non-threatening means for governmental and civil societal engagement, and can help establish or improve the perception of government legitimacy.²¹

Understanding what fragile states' health systems lack can serve as a basis for determining appropriate public health interventions. While variable across the fragile states spectrum, from a health sector capacity perspective there is generally a lack of:

1. Operable infrastructure.
2. Resources such as funding, trained staff, medication, and supplies.
3. Coordinated provision of health services.
4. Equitable access to care
5. Mechanisms to make, implement, and enforce policy.
6. Accountability.
7. Information management.
8. The ability to manage the health system as a whole.²²

The United Nations Millennium Development Goals provide a consensus-based long term target for humanitarian efforts. Of the eight goals, four have targets that are

directly related to the health sector. These goals and targets, summarized in table 2, provide a framework for planning and measuring the effectiveness of health systems strengthening efforts and will be discussed in more detail in chapter 4. The WHO believes the bulk of the burden of disease world-wide can be prevented or treated with existing and affordable technologies, and that to achieve national and international goals such as the Millennium Development Goals it is necessary to increase investment in strengthening health systems. Based on these goals and with the intent to strengthen health systems, the WHO has developed a “Framework for Action” consisting of recommendations (the six building blocks) for health services delivery and workforce; information, medical products, vaccines and technologies, financing, and leadership and governance. This framework addresses the fundamental need to improve health systems performance, recognizing that the best measure is the impact on health outcomes.²³

During humanitarian crises, the primary goal of the humanitarian response is to prevent and reduce morbidity and mortality. While varying types of disaster are associated with different scales and types of morbidity and mortality, the aim of intervention is to maintain the under-five mortality rate at the baseline rate prior to the disaster, reduce back to that rate, or at worst reduce to no more than double the baseline rate. Essential health services are considered those interventions that target the major causes of morbidity and mortality and must be supported by strengthening the health system as well.²⁴

Table 2. Millennium Development Goals Directly Related to Health	
Goal	Description
Goal 4: Reduce child mortality	Target: Reduce the under-five mortality rate by two-thirds by 2015, primarily by prevention of pneumonia, diarrhea, malaria and AIDS, which cause over 40% of the deaths in this age group worldwide.
Goal 5: Improve maternal health	Target: Reduce the maternal mortality ratio by three quarters by 2015, primarily through preventive measures Target: Achieve universal access to reproductive health by addressing persistent inequalities in attendance by skilled workers.
Goal 6: Combat HIV/AIDS, Malaria, and other diseases	Target: Halt and begin to reverse the spread of HIV/AIDS by 2015 Target: Begin to reverse the incidence of malaria and other major diseases such as tuberculosis by 2015.
Goal 7: Ensure environmental sustainability	Target: Halve the proportion of the world's population without access to safe drinking water and basic sanitation by 2015.

Source: Compiled by the author from United Nations, “The Millennium Development Goals Report 2010,” <http://www.un.org/millenniumgoals/pdf/MDG%20Report%202010%20En%20r15%20-low%20res%2020100615%20-.pdf> (accessed 15 May 2011), 27, 31, 32, 40, 51, 61.

The USAID is the government agency that provides economic and humanitarian assistance on behalf of the U.S. worldwide. In 2009 the House Committee on Appropriations²⁵ directed USAID to report on “current efforts to strengthen health systems,” with a summary of “plans to implement the World Health Organization (WHO) task shifting guidelines.” USAID states as its central goal for health programming the strengthening of health systems in developing countries, with efforts mainly intended to address disease- and health-specific improvements benefitting the system as a whole through preventive programs. USAID cites as its framework the six building blocks as defined by the WHO.²⁶

Lessons Learned and Recommendations

The principal objective of health systems strengthening is to improve access, quality, and utilization, while ensuring efforts are sustainable and can be transitioned from donor assistance to the host nation. At the country level, such interventions should target “high-impact and cost-effective interventions in maternal and child health, family planning and reproductive health, HIV/AIDS, tuberculosis, malaria, and other infectious diseases” by addressing key constraints to include human resources, infrastructure, health commodities, effective funding, and progress tracking.²⁷

In an attempt to understand the role of health in nation-building, the RAND Center for Domestic and International Health Security²⁸ assembled a team of political scientists, physicians, and economists to analyze the success of past attempts to rebuild public health and health care delivery systems after U.S. military deployments. Their conclusion was clear: “nation-building efforts cannot be successful unless adequate attention is paid to the population’s health.” They defined success as “improved conditions for water, sanitation, food, and nutrition, and lower rates of infectious diseases and mortality,” ultimately establishing a “sustainable health infrastructure and an appropriate public health system.” Using a hybrid of qualitative and quantitative analyses, they were able to represent a country’s improvement in health based on two core factors of a successful health reconstruction effort: infrastructure and resources, and coordination and planning.²⁹

Using the measures above as a basis for comparison, the authors demonstrated that while health system reconstruction efforts in Germany and Japan have proven the most successful, efforts in Haiti, Somalia, and Afghanistan have been the least successful.

They posit that this may be due at least in part to the poor quality of the health infrastructure prior to, or as a result of, conflict combined with the lack of successful coordination and planning. Because health is integrally linked to the water, sanitation, and electricity sectors, the report emphasizes that it would be misleading to measure success based on a single factor, such as the number of health care facilities reopened. Prior to the first Gulf War, Iraq had what was considered to be one of the most effective and modern health systems in the Arab world. But immediately after the war the health of the population declined markedly, in association with damage to health, sanitation, and water infrastructures. Health indicators in Iraq, such as infant mortality, rapidly declined after a steady improvement since 1960. There was also a noticeable rise in the rate of infectious diseases such as cholera, typhoid, dysentery, and hepatitis. The incidence of vaccine preventable diseases such as measles and whooping cough increased as well, due to a combination of the disruptive movement of the population and interruptions to vaccination programs. The study stressed the strong interdependency among the health and other sectors, concluding successful health reconstruction depends on planning and coordination among stakeholders and the availability of infrastructure and resources, including those not directly related to health care.³⁰

In their October 2009 Health Systems Report to Congress, USAID points out that the capacity of a post-conflict state is weak, requiring the basic elements of the health system to be built or rebuilt in order to transition from relief to development and make a positive impact on health outcomes. In Afghanistan, USAID's current health systems strengthening strategy focuses on growing the direct delivery of health care, improving overall capacity while developing health sector governance, and developing the

healthcare workforce. It is widely recognized globally that due to the complexity of health systems strengthening interventions across a variety of situations, there is a lack of tested and accepted health systems indicators, negatively affecting efforts to monitor progress and demonstrate effectiveness of investments.³¹

The USAID report recognizes the relationship of weak state leadership and governance capacity, and the impact on the design and implementation of effective health sector strategies to improve management, regulation, and equal distributions of basic health care services. USAID admits their challenge is the identification and strengthening of those critical components of the healthcare sector that have the greatest impact on health outcomes and collaborating with the partner countries, the private sector, and other donors.³² While improving access, quality, and utilization of health services are considered the main objective of health systems strengthening, it is equally important to ensure efforts to support host nation self-sustainability, allowing eventual complete transition from donor assistance.³³

Dr. Newbrander suggests a number of priority tasks for donors in fragile states health systems that may serve as a basis for U.S. military health services-related activities in stability operations. Given that local resources are likely inadequate or even non-existent, direct support will be necessary initially, but it is likewise critical to simultaneously engage in long term activities intended to grow capacity to enable eventual transition to the host nation. An initial assessment of the true state of the health sector, with attention to the nature and burden of disease, should precede other efforts. Response to the humanitarian crisis by initially addressing basic health needs, with preventive services such as immunizations the primary focus, can help to establish

governmental legitimacy. Working with the host nation government to develop policies, strategies, and plans for (re)developing the health system will serve to help align efforts. Creation of a basic package of health services based on host nation-driven strategy that address the most common and pressing health problems will help focus efforts for appropriate interventions to reduce mortality and morbidity. Development of trained personnel in sufficient numbers that can work in locations of need is a basic component of health systems strengthening. Because most causes of morbidity and mortality in fragile states are preventable, a sustainable supply of essential, cost-effective medications is critical to achieving desired health outcomes. While those services that will have the greatest impact on those health indicators determined to be the most crucial should be funded initially, attention to preventive and public health services is essential over the long term. Health facilities will likely need to be upgraded, rebuilt, or built, but it is important to consider the ability of the host nation to sustain those facilities when choosing which projects will have the most enduring impact.³⁴

The WHO recommends that efforts across all sectors need to be coordinated toward achieving desired health outcomes, stating “investments in education, housing, transport, water and sanitation, improved governance or environmental policy can all have a benefit on health.” A country’s ability to respond to communicable disease threats is a security issue and is often the “weakest link,” necessitating an internationally coordinated disease control effort.³⁵

Dr. Pearson cautions that whether intended or not, health sector interventions “always affect the interaction between citizen, service provider and policy-maker.” Because of this, he recommends that “international partners should aim to reinforce, and

not undermine, state resilience.” He further recommends that state-building, especially from the perspective of the health sector, should not wait until after conflict, but should seek to address those components believed to contribute to state fragility.³⁶

The literature is rich with recommendations for effective public health interventions to improve the health sector as a part of an overall effort to positively affect the stability of a fragile state across all sectors. Suggested recommendations target high impact, low cost, sustainable interventions that have the greatest evidence of improving the health of the population. These recommendations can serve as the basis to understand the most effective relationship between military and civilian public health efforts during stability operations.

Conclusion

Review of the civilian public health-related literature finds consensus that attention to health sector needs plays an important role in addressing the causes of state fragility, whether in an attempt to avoid conflict, during conflict, or post-conflict. In order to ensure a progression from crisis to public health stability, health systems strengthening requires not only the direct provision of health services and education, but also overall health sector reform to include security and capacity building to meet the immediate and long term needs of the population.³⁷

With the long-term goal of a stable state, the literature suggests health sector interventions must begin to emphasize outcomes rather than outputs as the measures of success. However, without the ability to measure performance (outputs), there will be a lack of objective measures of success and failure in ongoing crises on the shorter term, making midcourse corrections difficult if not impossible. Key health outcome indicators

include life expectancy, birth rate, death rate, child mortality rate, infectious disease rate, and malnutrition. While these indicators are monitored by the WHO for over 193 member states, they reflect longer term efforts. Better measures of short-term interventions include vaccination rates, percentage of births with skilled attendance, access to timely basic health care, and adequacy of health care supply. These measures may more appropriately monitor the performance of efforts intended to affect long-term outcomes.³⁸

Military health services-related activities in stability operations are primarily short term, target acute health sector-related problems, are direct patient care-centric, and not intentionally aligned to international outcomes standards. Civilian-based programs are generally long term, public health and health infrastructure-centric, consist of international stakeholders, and tend to align efforts and measures of success to international standards. While there is a gap, there is also an overlap of efforts, providing an opportunity for coordination of activities that can serve both military and civilian stakeholders.

¹Alina Rocha Menocal, Timothy Othieno, and Alison Evans, “The World Bank in Fragile Situations,” Overseas Development Institute, Issues Paper, 2008, <http://www.odi.org.uk/resources/download/3319.pdf> (accessed 14 May 2011), 1.

²Dr. Newbrander has 25 years of experience as a health economist and policy expert and is currently the technical director of the USAID project Basic Support for Institutionalizing Child Survival.

³Newbrander, 1.

⁴Dr. Pearson is an independent consultant and expert in international health and humanitarian interventions.

⁵Nigel Pearson, “The Role of the Health Sector in Wider State-Building,” Save the Children UK, Discussion Paper, 2010, http://www.healthandfragilestates.org/index2.php?option=com_docman&task=doc_view&gid=61&Itemid=38 (accessed 14 May 2011), 2

⁶Dr. Jones is a senior political scientist at the RAND Corporation and specializes in counterinsurgency and counterterrorism.

⁷Seth G. Jones et al., *Securing Health: Lessons from Nation-Building Missions* (RAND Corporation, Center for Domestic and International Health Security, 2006), http://www.rand.org/pubs/monographs/2006/RAND_MG321.pdf (accessed 11 May 2011), xv., xv.

⁸Mr. Dobbins has held several State Department and White House posts and is currently director of the RAND International Security and Defense Policy Center.

⁹James Dobbins et al., *The Beginner's Guide To Nation-Building* (RAND Corporation, National Security Research Division, 2007), http://www.rand.org/pubs/monographs/2007/RAND_MG557.pdf (accessed 14 May 2011), xvii.

¹⁰Pearson, 1.

¹¹Armin von Bogdandy, et al., *State-Building, Nation-Building, and Constitutional Politics in Post-Conflict Situations: Conceptual Clarifications and an Appraisal of Different Approaches* (Netherlands, Max Planck Yearbook of United Nations Law, Volume 9, 2005), http://www.mpil.de/shared/data/pdf/pdfmpuny/bogdandyua_9_579_613.pdf (accessed 14 May 2011), 584.

¹²Ibid., 613.

¹³Pearson, 3.

¹⁴World Health Organization (WHO), *Everybody's Business Strengthening Health Systems To Improve Health Outcomes Who's Framework For Action* (Geneva, Switzerland, WHO Press, 2007), http://www.who.int/healthsystems/strategy/everybodys_business.pdf (accessed 14 May 2011), 30.

¹⁵WHO, *Everybody's Business*, 2.

¹⁶World Health Organization (WHO), *Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and Their Measurement Strategies* (Geneva, Switzerland, WHO Press, 2010), http://www.who.int/entity/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf (accessed 14 May 2011), vi.

¹⁷WHO, *Everybody's Business*, 2.

¹⁸United States Agency for International Development (USAID), "Sustaining Health Gains—Building Systems," USAID, Washington, DC, Health Systems Report to Congress, October 2009, http://pdf.usaid.gov/pdf_docs/PDACN511.pdf (accessed 14 May 2011), 5.

¹⁹International Medical Volunteers Association, “The Major International Health Organizations,” <http://www.imva.org/Pages/orgfrm.htm> (accessed 14 May 2011).

²⁰Newbrander, 2, 3.

²¹Ibid., 3, 4.

²²Ibid., 6.

²³WHO, *Everybody’s Business*, I, v, iii.

²⁴Sphere Project, *Humanitarian Charter and Minimum Standards in Humanitarian Response*, Sphere Project Handbook (United Kingdom: Practical Action Publishing, 2011), <http://www.sphereproject.tv/p/handbook.html> (accessed 14 May 2011), 292.

²⁵Charged with establishing the specific expenditures U.S. governmental money expenditures. For this reason, the House Committee on Appropriations is considered one of the most influential committees.

²⁶USAID, “Sustaining Health Gains,” 5, 14.

²⁷Soumya Alva, Eckhard Kleinau, Amand Pomeroy, and Kathy Rowan, “Measuring the Impact of Health Systems Strengthening. A Review of the Literature” (Report prepared by Analysis, Information Management & Communications (AIM) Activity for the U.S. Agency for International Development (USAID), November 2009), 8.

²⁸The study of Domestic and International Health Security is housed within the RAND Center for Global Health and the RAND Center for Public Health Preparedness.

²⁹Jones et. al., “Health System Reconstruction and Nation-Building,” 1.

³⁰Ibid., 2, 3.

³¹USAID, “Sustaining Health Gains,” 25, 7, 27, 6.

³²Ibid., 15, 9.

³³Alva, et al., “Measuring the Impact of Health Systems Strengthening: A Review of the Literature,” 7.

³⁴Newbrander, 8.

³⁵WHO, *Everybody’s Business*, 10.

³⁶Pearson, ix, 24.

³⁷Newbrander, 16.

³⁸Jones et al., "Health System Reconstruction and Nation-Building," xxix.

CHAPTER 4

MEASURES OF MILITARY PUBLIC HEALTH INTERVENTIONS

Introduction

To effectively plan and monitor the collaborative efforts of military and civilian health-related interventions during stability operations, a common measurement framework is necessary. Such a framework should support health assistance over three categories: inputs, the resources necessary for health reconstruction; outputs, the results of interventions such as trained personnel or functional facilities; and the outcomes that are intended to directly affect the population, reflecting the consequences of interventions. This chapter will discuss relevant measurement frameworks, publically available health indicators and state fragility indices, and propose a logical framework that addresses inputs, outputs, and intended outcomes, thus forming the basis to answer the last of the secondary research questions: of existing publicly available measures, which are likely to be most useful to measure the impact of military public health interventions during stability operations?

Definitions and Background

A significant challenge in stability operations is the accurate, actionable, and meaningful assessment of short-term activities that have longer-term effects, with the intention of measuring progress toward campaign objectives. This is in part due to the difficulty of identifying standardized and reliable indicators and data capture methodologies.¹ Understanding how and what to measure when and for what reason lies at the heart of this challenge.

Joint and Army doctrine emphasize the importance and use of measures of effectiveness (MOEs) and measures of performance (MOPs). Doctrinally, MOEs assess “changes in system behavior, capability, or operational environment” and measure “the attainment of an end-state, achievement of an objective, or creation of an effect” while MOPs assess actions taken and measure task accomplishment.² The key here is MOPs measure task performance (are we doing things right) while MOEs measure the effect of progress toward stated objectives (are we doing the right things). Put another way, MOEs are intended to help answer whether actions taken are correct and producing the desired effects or whether alternative actions are necessary, while MOPs help to answer whether the appropriate action was taken, completed to standard, and used the expected resources. MOEs tend to be more subjective than MOPs and can be either qualitative or quantitative, while MOPs are usually more objective and quantitative. Generally speaking, to assure MOEs and MOPs do not belie a sense of accomplishment, they should be relevant, readily and reliably measurable, and responsive (timely). To ensure there is adequate data for measurement, the process for capture and management needs to be appropriately resourced.³

While Joint doctrine does not specifically address indicators, Army doctrine states that an indicator “provides insight” into and can inform multiple MOPs and MOEs, and, similar to MOEs and MOPs, should be measurable (quantitatively or qualitatively), collectable, and relevant. They should also be standardized and weighted to allow for formal and longitudinal comparison.⁴ Other sources recommend indicators should be succinct and descriptive, and help toward understanding, comparing, and improving a system. Furthermore, it is necessary to know whether an indicator is to be used for

understanding how a system works and may be improved, for performance monitoring, or for accountability (transparency).⁵ Doctrinally, the hierarchical alignment of indicator, MOE/MOP, condition, and end-state comprises the formal assessment framework recommended for planning, preparing for, and executing stability operations.⁶

Measurement Frameworks

Several measurement frameworks have been developed to help plan, manage, and monitor the progress of humanitarian interventions, in general and as part of stability operations specifically. Most are aligned to the DoD stability functions: security, humanitarian assistance, economic stabilization and infrastructure, rule of law, and governance and participation (table 3). Relevant frameworks are discussed in order to provide a basis for a proposed logical framework for measuring military public health interventions during stability operations.

The United States Army Peacekeeping and Stability Operations Institute⁷ first published their handbook –“Guiding Principles for Stabilization and Reconstruction” in 2009 in recognition that while the military has a framework founded in doctrine, the civilian sector had no such formal basis for strategic decision making. The recommended audience is U.S. governmental agencies, primarily the decision makers, planners, and practitioners, involved in Stabilization and Reconstruction missions. Consistent with military stability operations doctrine, the overarching hierarchical strategic framework is organized to address end-states, conditions, and approaches across overlapping sectors: safe and secure environment, the rule of law, stable governance, a sustainable economy, and social well-being. To address the inter-related nature of these sectors, the framework further defines several cross-cutting principles: host nation ownership and capacity,

political primacy, legitimacy, unity of effort, security, conflict transformation, and regional engagement. The end-state –Social Well-Being” is the most directly related to health sector needs, with the condition —Access to and Delivery of Basic Needs Services” specifically comprising the expectations of public health interventions. The handbook refers to the Measuring Progress in Conflict Environments Metrics Framework as a —means to assess whether conflict drivers have been diminished and whether host nation institutions can maintain stability without significant international assistance.”⁸

Designed to be used by policymakers, analysts, planners, and those who implement programs and projects in conflict areas world-wide, the Measuring Progress in Conflict Environments Metrics Framework is designed as an integrated interagency and intergovernmental tool to measure progress before, during, and after stabilization and reconstruction operations. It is a hierarchical system of outcome-based goals, indicators, and measures. The framework is intended to provide a formal means of ensuring goals are realistic and strategically oriented toward resolving conflict and achieving stabilization. The framework components and metrics are designed to identify potential contributors of continued conflict and instability as a means to inform policy while measuring progress toward the end-state, considerate of indigenous capacity. Based on the United States Institute of Peace’s –Framework for Societies Emerging from Conflict,”⁹ the framework is organized to measure the performance along five sectors: safe and secure environment, political moderation and stable governance, rule of law, sustainable economy, and social well-being.¹⁰

With a stated purpose to —promote common understanding of what a health system is and what constitutes health systems strengthening,” the WHO has developed a

monitoring and evaluation framework based on their core functions as defined in the World health report 2000. Aligned with the Millennium Development Goals, their six building blocks are: service delivery, health workforce, information, medical products, vaccines and technologies, financing, and leadership and governance (stewardship). Given the premise that a health system needs strengthening, the framework is intended to provide a means to clearly state the problems, where and why interventions should be made, what can be expected to happen as a result of interventions, and how change can be monitored. The framework links the six building blocks to four overall goals (outcomes): improved health (level and equity), responsiveness, social and financial risk protection, and improved efficiency. For each building block there are suggested priorities of effort.¹¹

The WHO's "Handbook of Indicators and Their Measurement Strategies" identifies indicators and related measurement strategies related to their six building blocks. It focuses on effective measures of health systems capacity and how inputs, processes, and outputs are related to outcomes. The framework is designed for evaluating and monitoring the management of health system investments (programmatic), health systems performance, and results of health intervention strategies. The handbook provides a list of recommended core indicators for each building block to include definition, measurement periodicity, data collection methods, and data sources.¹²

The Sphere Project Handbook, *Humanitarian Charter and Minimum Standards in Humanitarian Response*, represents the ongoing efforts of a project that began in the late 1990s as an initiative of the Red Cross/Red Crescent Movement and a group of humanitarian-concerned NGOs. It provides the core and minimum standards that reflect

the principles of their Humanitarian Charter and how to translate them into practice. The proposed standards are evidence-based and represent broad health sector consensus on best practice response to humanitarian crises. While the intended audiences are those local, national and international humanitarian agencies' practitioners involved in planning, managing or conducting a humanitarian response, it is expected that the handbook would also be useful for the military and private sector as well, especially as a means to understand the standards set forth and used by humanitarian agencies. For their purpose, the authors refer to humanitarian response as comprising those responses to ~~n~~natural disasters, conflict, slow- and rapid-onset events, rural and urban environments, and complex political emergencies in all countries.”¹³

The six core standards defined by the Sphere Project reflect essential processes that span all sectors (figure 2). These core standards are structured to reflect their qualitative nature and any conditional thresholds, recommended activities and inputs (key actions), key indicators (and recommended thresholds) to measure processes and results of actions, and any further guidance based on lessons learned.¹⁴

Minimum standards are organized into four sets of life-saving activities (figure 2). In contrast to the core standards the minimum standards are quantitative, intended to measure the attainment of the minimum levels necessary for effective intervention. Like the core standards, they are structured to indicate key actions, indicators, and guidance on use. Of the minimum standards, two are most directly relevant to, and provide a basis for, assessing military public health interventions: water supply, sanitation and hygiene promotion; and health action.¹⁵

The minimum standards for water supply, sanitation and hygiene promotion express the basic principles reflected in international law, the right to: life and dignity, protection and security, and to receive need-based humanitarian assistance. Based on the WHO's definition of a health system, the health systems standards reflect the six building blocks of the WHO's health system framework. The essential health services standards consider both preventative and curative health services spanning six categories (figure 2).¹⁶ The handbook appendices suggest a Health Assessment Checklist, surveillance reporting forms, and formulas for calculating key health indicators.

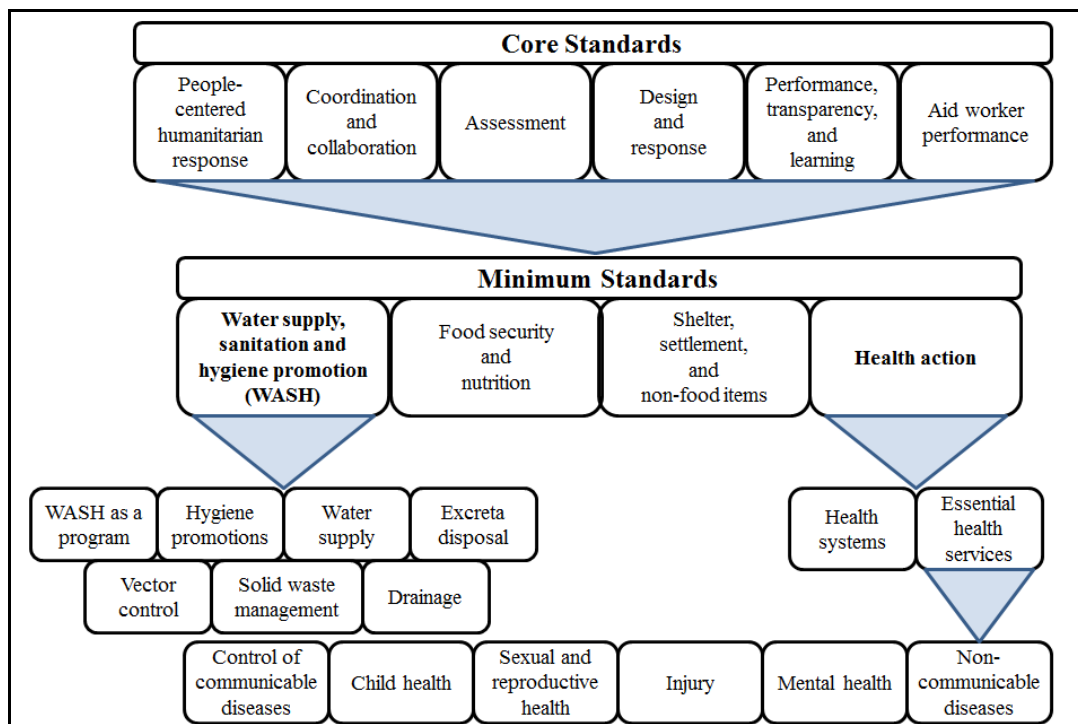


Figure 2. Sphere Project Core and Minimum Standards in Humanitarian Response

Source: Created by the author, adapted from Sphere Project, Sphere Project Handbook, *Humanitarian Charter and Minimum Standards in Humanitarian Response* (United Kingdom: Practical Action Publishing, 2011), <http://www.sphereproject.tv/p/handbook.html> (accessed 14 May 2011).

The USAID has collaborated with the Health Metrics Network, WHO, and other research centers domestically and abroad to develop the “Health Systems Assessment Approach” based on the WHO’s six core building blocks of a working health system. This framework uses indicators from existing online data sources (e.g., Demographic and Health Surveys, WHO Statistical Information System, World Bank World Development Indicators), producing country-specific health systems profiles and analytical tools.¹⁷ The framework recommends sources and indicators for each of the six building blocks, listing them by organization in an appendix.

While no single framework is likely sufficient, most are consistent with the DoD stability sectors and have been designed to help plan, manage, and monitor the progress of humanitarian interventions. All require a clear understanding of applicable, evidence-based indicators, MOEs, MOPs, conditions, and end-states. The next sections will discuss the evidence for health indicators that will inform MOEs and MOPs, and fragility indices that will provide a basis for measuring outputs and outcomes against the strategic end-state.

Framework	Framework Components (Sectors)				
DOD stability functions (JP 3-07)	Security	Humanitarian Assistance	Economic Stabilization and Infrastructure	Rule of Law	Governance and Participation
US S/CRS	Security	Humanitarian Assistance and Social Well-Being	Economic Stabilization and Infrastructure	Justice and Reconciliation	Governance and Participation
MPICE	Safe and Secure Environment	Social Well-Being	Sustainable Economy	Rule of Law	Political Moderation and Stable Governance
PKSOI	Safe and Secure Environment	Social Well-Being	Sustainable Economy	Rule of Law	Stable Governance
CSIS/AUSA	Security	Social and economic wellbeing		Justice and reconciliation	Governance and participation
RAND ¹	Security	Humanitarian relief	Economic stabilization	Democratization	Governance
UNDP/USAID ²	Civil security		Economic	Judicial governance	Political governance
UNDP/World Bank	Security	Social	Economic		Political
OECD	Security	Social	Economic		Political
AU NEPAD ³	Security	Socioeconomic development		Human rights, justice, and reconciliation	Political transition, governance

Additional sectors: ¹ Development, ² Administrative, ³ Coordination and management

AU NEPAD	African Union New Partnership for Africa's Development
AUSA	Association of the U.S. Army
CSIS	Center for Strategic and International Studies
OECD	Organisation for Economic Co-Operation and Development
PKSOI	U.S. Army Peacekeeping and Stability Operations Institute
MPICE	Measuring Progress in Conflict Environments
UNDP	United Nations Development Programme
USAID	U.S. Agency for International Development
US S/CRS	U.S. Department of State Coordinator for Reconstruction and Stabilization

Source: Compiled by the author, adapted from United States Institute of Peace, *Guiding Principles for Stabilization and Reconstruction* (Washington, DC, United States Institute of Peace Press 2009), http://www.usip.org/files/resources/guiding_principles_full.pdf (accessed 15 May 2011), 11-226.

Health Indicators

While there is no formal consensus regarding a standardized set of health indicators to be used on an international scale during humanitarian crises, key organizations use online sources to obtain data used in their frameworks. This section, while not exhaustive, discusses the most commonly recommended health indicators as a basis for determining which may be most useful to measure the impact of military public health interventions during stability operations.

With health-related data covering a span of 20 years from 193 member states provided on an annual basis, the WHO's World Health Statistics series summarizes the ongoing progress toward achieving the health-related Millennium Development Goals. Because of their extensive database the WHO is able to apply statistical modeling techniques to adjust as necessary for missing values and known biases in order to maximize comparability across countries over time.¹⁸ The "World Health Statistics 2010 Indicator compendium"¹⁹ provides a list of the WHO indicators and key information about each one to include: rationale and methods related to measurement, and limitations. See table 8 for a list of the WHO country level health-related Millennium Development Goal indicators, all of which are freely available online.

Health systems strengthening interventions generally focus on improving access, quality, and utilization of health services. Based on USAID's stated challenge to strengthen the most critical parts of health systems by addressing the local drivers of health, the country profiles in their 2009 Health Systems Reports to Congress were based in part on the following health metrics: maternal mortality ratio, under-five mortality rate, modern contraceptive prevalence rate, HIV prevalence, tuberculosis case detection rate,

malaria prevalence, rural sanitation coverage, nurses and midwives coverage, skilled attendance at birth.²⁰

Dr. Himmler suggests that the following metrics are critical to tracking the short and long term effects of military medical interventions during stability operations: under-five mortality rate, endemic diseases rates, alcohol and tobacco use rates, childhood immunization rates, percent of the population with access to clean water, percent of the population with access to primary health care, local capacity for emergency provision of essential services during disasters, and disaster preparedness management plan in place and exercised. Based on the Sphere Project recommendations he suggests the following public health engagements that would affect these metrics:²¹

1. Develop wells/potable water collection/storage systems (10-15L/day/person).
2. Improve host nation capacity to procure and distribute medical supplies.
3. Improve access to primary health care: services, economic, social and cultural accessibility and acceptability.
4. Improve care for children under the age of five, targeting immunizations and treatment of acute watery diarrhea (nutritional support and oral rehydration therapy).
5. Prevention/treatment of endemic diseases, targeting tuberculosis, malaria, and HIV.
6. Capacity for emergency response: training and supplies.

The authors of the Sphere Project Handbook suggest while the crude mortality rate may be the most useful to monitor the severity of a humanitarian emergency, the under-five mortality rate is more sensitive.²² The U.S. Army Peacekeeping and Stability

Operations Institute suggests that during a humanitarian crisis, those at greatest risk are women, children, the elderly or disabled, and those with HIV/AIDS. In such settings health indicators such as maternal mortality and under-five mortality from waterborne diseases, lack of immunization, malaria, and other infectious diseases may best reflect where the most immediate attention is needed, and where the greatest long term gains may be possible.²³ The Rand Corporation, likewise, suggests the critical health outcome measures are: “life expectancy rate, birth rate, death rate, infant mortality rate, infectious disease rate, and malnutrition.”²⁴

While all of the eight Millennium Development Goals are inter-related and require an integrated effort, four have targets that are most directly related to the health sector: reducing child mortality; improving maternal health; combating HIV/AIDS, malaria, and other diseases; and access to safe drinking water and basic sanitation. Specific causes of deaths among children under-five years of age (table 4) provide a basis for measuring targeted interventions against longer term outcomes.

The prevailing evidence recommends a core set of health measures that span outputs (MOPs) and outcomes (MOEs). While most of these are freely available via reputable online sources at the country level, it is likely at least some will need to be captured locally to be immediately useful. The recommendations in this section provide a guide as to what should be measured, which should then inform planners which interventions are most likely to have a positive impact on desired health outcomes. To understand how public health interventions affect the strategic end-state, it will be necessary to identify a measurement of state stability, or state fragility.

Table 4. Causes of death among children under 5 years of age globally [2008]	
Cause	Percentage
Under-nutrition	Contributes to < 1/3
Neonatal (preterm birth, asphyxia, sepsis, pneumonia, congenital abnormalities, diarrheal diseases, tetanus, other neonatal)	41%
Other causes	16%
Diarrheal diseases	14%
Pneumonia	14%
Malaria	8%
Injuries	3%
AIDS	2%
Measles	1%

Source: United Nations, “The Millennium Development Goals Report 2010,” <http://www.un.org/millenniumgoals/pdf/MDG%20Report%202010%20En%20r15%20-low%20res%2020100615%20-.pdf> (accessed 15 May 2011), 27.

State Fragility Indices

There is understandably significant debate regarding the quantifiably accurate representation of state fragility. Available data sources are relatively new, somewhat subjective, and still maturing. However, given the general acceptance of measurement frameworks intended to plan, develop, and monitor stability operations, it would seem necessary to make a best effort to define a measurable strategic end-state. While several models have been developed to measure state fragility, failure, or peace, most have a common framework based on the assessment of governmental effectiveness and legitimacy from the perspectives of dynamics of governance, societal conflict, and systemic development.²⁵ This section will review several such indices as a basis for quantifiably defining the desired strategic end-state.

The “User’s Guide on Measuring Fragility,” produced by the United Nation Development Programme, is a comprehensive comparative analysis of eleven fragility

indices, describing the concepts and methods from which the rankings are derived. Noting there is no “undisputed” definition of fragility, the analysis is based on the premise that a state is considered fragile when its effectiveness and/or legitimacy is weak or fails, as applied across the sectors of security, economic, political or social/cultural, and environmental. The analysis is designed to address what indices exist, what concepts they are intended to measure, how well the concepts are measured, and under what circumstances should they be applied. Indices are selected based on six criteria: relevancy (fragility at the country level), quantification (cross-country comparison), accessibility, (freely available online), transparency (methodology), appropriate multi-state coverage, and timeliness of updates. Fragility indices have a range of uses to include early warning and early action information, evaluation of interventions, policy guidance, public awareness, research, and risk analysis. There are 41 categories of indicators that are used for these 11 fragility indices, most of which can be readily aligned to the DoD stability functions (table 5).

Armed conflict	Democracy	Government	Population
Business	Economy and Finance	Internationalization	Refugees and IDPs
Civil & Political Rights & Freedoms	Education	Life Expectancy	Regime
Communications	Energy	Migration	Regionalization
Corruption and Abuse of Office	Environment	Militarization	Rule of Law
Coup d'état	Exclusion and Discrimination	Mortality	Social Cleavages
Crime	Foreign Aid	Physical Integrity	Social Unrest – Riots
Detainees and Prisoners	Gender	Political Culture	Terrorism
Development	Health	Political Violence	Trade
	Infrastructure	Poverty	Unemployment
		Property Rights	Water

Source: Javier F. Mata and Sebastian Ziaja, “User’s Guide on Measuring Fragility” (German Development Institute, United Nation Development Programme, 2009), http://www.undp.org/oslocentre/docs09/Fragility_Users_Guide_%28web%29.pdf (accessed 15 May 2011), 81.

Fragility Index	Concept Measured	Purpose	Conceptual Dimension				Reliability		Coverage	Replicability	
			Se	P	E	So	TorU	OR		DA	Do
Peace and Conflict Instability Ledger	State instability	Predictive	X	X	X	X	+	+	0	0	+
WGI Political Stability and Absence of Violence	Political stability and absence of violence	Descriptive	X				+	+	+	-	0
Index of African Governance	Governance	Descriptive	X	X	X	X	0	0	-	+	+
BTI State Weakness Index	State weakness	Descriptive	X	X			0	-	0	+	0
CIFP Fragility Index	State fragility	Predictive / Descriptive	X	X	X	X	0	0	+	-	-
Index of State Weakness	State weakness	Descriptive	X	X	X	X	-	0	0	-	+
Failed States Index	State failure	Predictive / Descriptive	X	X	X	X	-	0	0	-	-
State Fragility Index	State fragility	Descriptive	X	X	X	X					
CPIA/IDA RAI	State fragility (development orientation)	Descriptive		X	X	X	-	0	-	-	0
Political Instability Index	Social and political unrest	Predictive		X	X	X	-	0	0	-	-
Global Peace Index	Negative peace	Descriptive	X				-	0	0	-	-

Conceptual Dimensions: **(Se)**curity, **(P)**olitical, **(E)**conomic, **(So)**cial

TorU: Transparency or Uncertainty

OR: Overall Reliability

DA: Data Availability

Do: Documentation

CPIA/IDA RAI: Country Policy and Institutional Assessment / International Development Association Resource Allocation Index

WGI: World Governance Indicators

BTI: Bertelsmann Transformation Index

CIFP: Country Indicators for Foreign Policy

Source: Adapted by author from Javier F. Mata and Sebastian Ziaja, “User’s Guide on Measuring Fragility” (German Development Institute, United Nation Development Programme, 2009), http://www.undp.org/oslocentre/docs09/Fragility_Users_Guide_%28web%29.pdf (accessed 15 May 2011).

Actors producing fragile state indices fall into four broad categories: universities think tanks, media corporations, and international organizations. It is important to consider the source of fragility indices, as agendas may influence the construct, especially background concepts, affecting normalization.²⁶ Table 6 summarizes the 11 indices

mentioned above, comparing concepts measured, purpose, conceptual dimensions, and relative data reliability, coverage, and replicability. A cursory review finds the Peace and Conflict Instability Ledger, which covers all four conceptual dimensions, and the World Government Indicators Political Stability and Absence of Violence index, which covers the dimension of security, to provide the highest quality data.

Most of the data for fragility indices are produced by international organizations such as the Organisation for Economic Co-operation and Development, the World Bank, the International Monetary Fund, and the United Nations. Given the limited data pool, it should be no surprise that the indices do not vary significantly by rank and score. The World Bank and the United Nations supply the bulk of the data for fragility indices. Most indices rely on public statistics, however the Worldwide Governance Indicators use only expert and survey data.²⁷

While the authors of the “User’s Guide on Measuring Fragility” conclude fragility indices will need to mature before they can be used to inform policy, they do offer principles for application:²⁸

1. Select an index based on expected need.
2. No single or aggregate of indices can fully represent the complex concept of fragility, but they can provide a basis for measuring progress toward an end-state.
3. Understand the index; knowing the concepts and methods from which the index is derived can help manage known deficiencies.
4. Consider using fragility indices in combination with other measures.

5. Know how and when use fragility indices; take care if using for policy decision making.

Acknowledging growing concerns regarding the misuse of conflict and security indicators and indices, a systematic review of open-source databases of conflict and security indicators was conducted in 2007. Reviewing 126 databases, the authors classified 62 indicators and indices into 6 categories (peace and conflict, political rights and human rights, refugees, displacement and migration, terrorism, and war/conflict) and 64 sub-categories, providing a list and brief information about each database. Criteria for database inclusion included: freely accessible open-source data, quantitative or categorical data, credible source, ongoing data updates, and data in a time-series format.²⁹ The goal of the project was to provide an overview of open-source databases on conflict and security indicators and indices to assist researchers in selecting appropriate databases for early warning and conflict analysis.”³⁰ Their recommendations for index selection mirrored those detailed in the “User’s Guide on Measuring Fragility.” Building on this research the authors reviewed, but did not rate, 17 conflict and security indices in significant detail in the subsequent report “Conflict and Security Indices: A Summary of Open Source Data.” This comprehensive report provides background information such as: description and purpose of each project, supporting organization, principal investigators, data sources used, temporal coverage, number of countries included, list of variables, methodology, and accessibility (online resource).³¹ This information is expected to be useful in selecting appropriate fragility indices.

The State Failure Task Force was established in 1994 by then Vice President Al Gore to analyze the factors that affect the stability of states in the post-Cold War era.

“Failures” were categorized into four kinds of political crises: revolutionary wars, ethnic wars, adverse or disruptive regime transitions, and genocides or politicides. These categories formed the basis of a model for comparison and to predict the likelihood of a state failure over the next two years. The phase I model compared states that met criteria as failed states against otherwise similar controls. This model formed the basis for two subsequent phases of evaluation, with final analysis covering 114 state-failures between 1955 and 1998. Over 600 variables were evaluated, covering four categories: demographic and societal, economic, political and leadership, and environmental. Of these, 75 were considered high priority based on their likelihood to correlate with state failure and being based on “reasonably complete and reliable data.” Of these high priority variables, only 31 were best able to distinguish between failures and non-failures. The task force found that the best fit model, able to discriminate between failed and stable states, was based on only three factors: infant mortality (compared to the international median) as an indirect measure of quality of life, openness to international trade, and level of democracy. While infant mortality does not represent causation, it is considered to play a key role in the model because it alone is reflective of the overall quality of material life in a country, though the impact on the model was much stronger in state failure of democracies.³²

While there are many freely available online fragility index databases, most use data from a handful of sources, predominantly the World Bank and the United Nations. Because of the relative few data sources, the performance among the indices does not vary significantly. Categorization and detail about fragility indices can provide a basis for selection, depending upon the desired end-state. Having identified publicly available

online sources for health indicators and stability indices, a formal assessment framework is necessary in order to align needs with overall goals.

Logical Framework

Logical models (logical framework) are tools to involve the domain expert in project planning, design, implementation, analysis, and the generation of knowledge. Through a formal if-then logical progression, they link assumptions, resources (inputs), activities (processes), outputs, outcomes, and impacts, explicitly describing the underlying logic and theory (top of table 7). The purpose is to provide stakeholders a clear, systematic, visual “roadmap” linking the needs to the end-state, through a sequence of measurable events, in order to understand how and if planned actions achieve the desired results. Through formal continuous assessment, such a model provides the opportunity to monitor and make changes to a program as necessary. While there are three basic categories of logic model approaches (theory or conceptual, outcomes, and activities or applied), each of which may better fit a specific program type, in practice a program will likely use elements of all three.³³

A logical framework requires formal statement of goals, objectives, outputs, activities, and inputs, identifying indicators through a system analysis approach. Benefits include the definition of measures and their relationship to each other, the linking activities to effects, and the ability to enable a learning organization. Dr. Drifmeyer and Dr. Llewellyn point out that many international organizations and NGOs use the logical framework for humanitarian projects as a planning and evaluation tool. Based on the premise that all interventions can result in unintended consequences, the authors suggest that effects are measurable even if unobserved. This, the authors suggest, is a recurring

problem with short-term DoD interventions that are not aligned with long-term ongoing humanitarian efforts by other organizations. They recommend that, given that logical frameworks have been demonstrated to be useful across a wide range of organizations and humanitarian operations, such a tool, linked to international outcomes-based standards against which performance could be measured, should be considered for adoption by the DoD.³⁴

The RAND Corporation suggests health programs have historically tended to emphasize outputs (e.g. number of clinics/hospitals built, nurses trained) instead of outcomes. They recommend health assistance should be categorized into inputs, outputs, and outcomes, forming the basis for a “performance matrix.” They suggest that because key health outcomes measures may not be readily available, shorter-term measures, those more directly associated with the public health interventions, could serve as proximal indicators. They identified and outlined six criteria that can help compile performance metrics, all of which are well accommodated within a logical framework:³⁵

1. Inputs and outputs need to be tied to outcomes.
2. Good indicators are clearly interpretable by all stakeholders.
3. Performance indicators should be prioritized to show logical progression toward a goal and linked to a limited number of focused targets.
4. Performance indicators should be integrated and aligned to policy actions and donor interventions across all areas, including political, security, economic and health recovery issues, consistent with the country’s characteristics.
5. Effective indicators belong to the host nation to ensure sustainability after transition.

6. Indicators need to be sufficient to drive donor buy-in, translating promises into financial commitments, disbursements, and priority technical assistance while assuring continuity of effort

Using the logical framework design, the above literature recommendations for inputs, outputs, and outcomes are summarized in table 7.

Table 7. Logical Framework: Components and Literature-based Examples					
	Planning		Intended Results		
	Resources/Inputs	Activities/Processes	Outputs	Outcomes (short & long term)	Impacts
1	Enabling (protective) or Limiting (barriers) Organizations, resources (human, organizational, financial, facilities, equipment, and supplies), policies, laws, regulations, geographic, time	What is done with the resources - processes, techniques, tools, events, technology, and actions: Products Services Infrastructure	Direct results of program activities - accomplished to the expected standard (measures)	Specific changes in attitudes, behaviors, knowledge, skills, status, or level of functioning expected to result from program activities	Organizational, community, and/or system level changes expected to result from program activities
2	-Amount of financial assistance -Number of international personnel deployed -Amount/type health equipment, drugs, etc.	Maternal and child health, family planning and reproductive health, HIV/AIDS, tuberculosis, malaria, and other infectious diseases	-Number/quality of trained doctors & nurses -Number/quality health facilities built/rebuilt -% of children < 1yoa immunized -% births with skilled attendance -% of population w/ access to basic health services within 2 hours -% of health facilities that report “stock outs” of essential drugs -Modern Contraceptive Prevalence Rate -Rural Sanitation Coverage	-Life expectancy rate -Birth rate -Death rate -Infant mortality rate -Infectious disease rate -Malnutrition rate -Maternal Mortality Ratio -Under-5 Mortality Rate -HIV Prevalence -Tuberculosis Case Detection Rate - Malaria prevalence	
3		-Hygiene promotions, water supply, excreta disposal, vector control, solid waste management, and drainage - Control of communicable diseases, child health, sexual and reproductive health, injury, mental health, and non-communicable diseases			

4		<ul style="list-style-type: none"> -Develop wells/ potable water collection/storage systems -Improve HN capacity to procure and distribute medical supplies. -Improve access to primary health care: services, economic, social and cultural accessibility and acceptability. -Improve care for children under the age of 5, targeting immunizations and treatment of acute watery diarrhea (nutritional support and oral rehydration therapy). -Prevention/treatment of endemic diseases, targeting TB, Malaria and HIV. -Capacity for emergency response: training and supplies. 	<ul style="list-style-type: none"> -Endemic diseases rates, alcohol and tobacco use rates -Childhood immunization rates -% population with access to clean water -% population with access to primary health care -Local capacity for emergency provision of essential services during disasters -Disaster preparedness management plan in place and exercised 	<ul style="list-style-type: none"> -Under 5 mortality rate 	
5			<ul style="list-style-type: none"> - Children aged <5 years underweight (%) - Measles immunization coverage among 1-year-olds - Births attended by skilled health personnel (%) - Contraceptive prevalence - Adolescent fertility rate (per 1000 girls aged 15–19 years) - Antenatal care coverage (%): at least 1 visit and at least 4 visits - Unmet need for family planning (%) - % Males aged 15–24 years with comprehensive correct knowledge of HIV/AIDS - % Females aged 15–24 years with comprehensive correct knowledge of HIV/AIDS - Antiretroviral therapy coverage among people with advanced HIV infection (%) - Children aged <5 years sleeping under insecticide-treated nets (%) - Children aged <5 years with fever who received treatment with any antimalarial (%) - Population using improved drinking-water sources (%) - Population using improved sanitation (%) 	<ul style="list-style-type: none"> - Under-five mortality rate (probability of dying by age 5 per 1000 live births) - Maternal mortality ratio (per 100 000 live births) - Prevalence of HIV among adults aged 15–49 years (%) - Malaria mortality rate (per 100 000 population) - Tuberculosis mortality rate among HIV-negative people (per 100 000 population) 	

6		Efforts to reduce: Under-nutrition, Neonatal (preterm birth, asphyxia, sepsis, pneumonia, congenital abnormalities, diarrheal diseases, tetanus, other neonatal), Diarrheal diseases, Pneumonia, Malaria, Injuries, AIDS, Measles			
7					Social Well-Being: Access To and Delivery Of Basic Needs Services

Source: Compiled by the author from ¹W.K. Kellogg Foundation, *Logic Model Development Guide* (Battle Creek, I: W.K. Kellogg Foundation, January 2004), <http://www.compact.org/wp-content/uploads/2010/03/LogicModelGuidepdf1.pdf> (accessed 15 May 2011), 8; ²United States Agency for International Development (USAID), –Sustaining Health Gains–Building Systems” (Washington, DC: USAID. October 2009), http://pdf.usaid.gov/pdf_docs/PDACN511.pdf (accessed 14 May 2011), 51; Seth G. Jones et al., *Securing Health: Lessons from Nation-Building Missions* (RAND Corporation, Center for Domestic and International Health Security, 2006), http://www.rand.org/pubs/monographs/2006/RAND_MG321.pdf (accessed 14 May 2011), 296; Soumya Alva et al., –Measuring the Impact of Health Systems Strengthening: A Review of the Literature” (Report prepared by Analysis, Information Management & Communications (AIM) Activity for the U.S. Agency for International Development (USAID), November 2009), http://www.usaid.gov/our_work/global_health/hs/publications/impact_hss.pdf (accessed 14 May 2011), 7; ³Sphere Project, *Humanitarian Charter and Minimum Standards in Humanitarian Response*, Sphere Project Handbook (United Kingdom: Practical Action Publishing, 2011), <http://www.sphereproject.tv/p/handbook.html> (accessed 14 May 2011), 80, 309; ⁴Bruno Himmler, –Humanitarian Assistance and Capacity Development: Unifying Efforts of DoD and the Civilian Community,” *Peacekeeping and Stability Operations Institute (PKSOI) Bulletin* 2, no. 3 (April 2010), http://pksoi.army.mil/PKM/publications/bulletin/volume2issue3/Bulletin_Volume2_issue_3.pdf (accessed 14 May 2011), 13; ⁵*World Health Statistics 2010* (Geneva, Switzerland, WHO Press, 2010), http://www.who.int/whosis/whostat/EN_WHS10_Full.pdf (accessed 15 May 2011), 3; ⁶United Nations, –The Millennium Development Goals Report 2010,” <http://www.un.org/millenniumgoals/pdf/MDG%20Report%202010%20En%20r15%20-low%20res%2020100615%20-.pdf> (accessed 15 May 2011). 27; ⁷United States Institute of Peace, *Guiding Principles for Stabilization and Reconstruction* (Washington, DC, United States Institute of Peace Press, United States Army Peacekeeping and Stability Operations Institute, 2009), http://www.usip.org/files/resources/guiding_principles_full.pdf (accessed 15 May 2011), 10-161.

As a basis for recommending appropriate measures for a logical framework, a preliminary data analysis was performed using the two fragility indices suggested in the State Fragility Indices section (Peace and Conflict Instability Ledger risk score and the Worldwide Governance Indicators Political Stability and Absence of Violence/Terrorism percentile rank) and the output and outcome measures consistently recommended (Health Indicators section) and for which data is publically available. Table 8 lists the data description, date range, and source. Due to the difficulty with reliably capturing country level health-related data and the different methods and relative immaturity of the fragility indices, there is not complete agreement among the date ranges, but all data represent the most recent available and for the most part reflect the period including 2008.

To explore the relationship among the intended health outcomes (decreased neonatal, infant, and under-five mortality rates) and state fragility, a Pearson correlation (the measure of linear relationship between two variables) was performed between each outcome measure and each fragility index. Each correlation is statistically significant ($p < 0.001$), with a generally stronger correlation using the Peace and Conflict Instability Ledger risk score (table 9, figures 3 and 4). This suggests an expected correlation between child mortality rates and the fragility of a state (higher child mortality rate associated with higher state fragility). While not intending to suggest a causal link between the two, the findings do support what has been suggested in current literature. It is important to note that the correlation between each of neonatal, infant, and the under-five mortality rate and the fragility indices do not vary significantly. This finding may identify an opportunity for the use of a shorter-term outcome measure that is useful during stability operations.

Measure	Date Range	Source
PCIL (risk score)	2007	WGI-PSAV/T
WGI-PSAV/T (percentile rank)	2008	PCIL
Neonatal mortality rate (probability of dying by 28 days per 1000 live births)	2008	WHO
Infant mortality rate (probability of dying by age 1 per 1000 live births)	2008	WHO
Under-Five mortality rate (probability of dying by age 5 per 1000 live births)	2008	WHO
Measles (MCV) immunization coverage among 1-year-olds (%)	2009	WHO
Physician density (per 10,000 population)	2000-2009 ¹	WHO
Nursing and midwifery personnel density (per 10,000 population)	2000-2009 ¹	WHO
Births attended by skilled health personnel (%)	1993-2008 ²	WHO
Children aged <5 years sleeping under insecticide treated bednets (%)	2000-2008 ³	WHO
Proportion of population using improved drinking-water sources (%)	2008 ⁴	WHO
Proportion of population using improved sanitation facilities (%)	2008 ⁴	WHO

WGI-PSAV/T: Worldwide Governance Indicators: Political Stability and Absence of Violence/Terrorism

PCIL: Peace and Conflict Instability Ledger

WHO: World Health Organization

^{1,4}10 missing data points

²11 missing data points | 8 dates earlier than 2000

³137 missing data points

Source: Compiled by the author from the following sources: WGI-PSAV/T, http://info.worldbank.org/governance/wgi/mc_countries.asp; PCIL, http://www.cidcm.umd.edu/pc/executive_summary/exec_sum_2010.pdf; WHO, <http://apps.who.int/ghodata/#>.

Stability Index	Mortality Rate		
	Neonatal	Infant	Under-Five
WGI-PSAV/T	-0.611	-0.563	-0.529
PCIL	0.754	0.803	0.809

WGI-PSAV/T: Worldwide Governance Indicators: Political Stability and Absence of Violence/Terrorism

PCIL: Peace and Conflict Instability Ledger

*p values < 0.001

Note: Difference in slope of correlation due to difference in ranking method – compare absolute correlations.

Source: Created by the author.

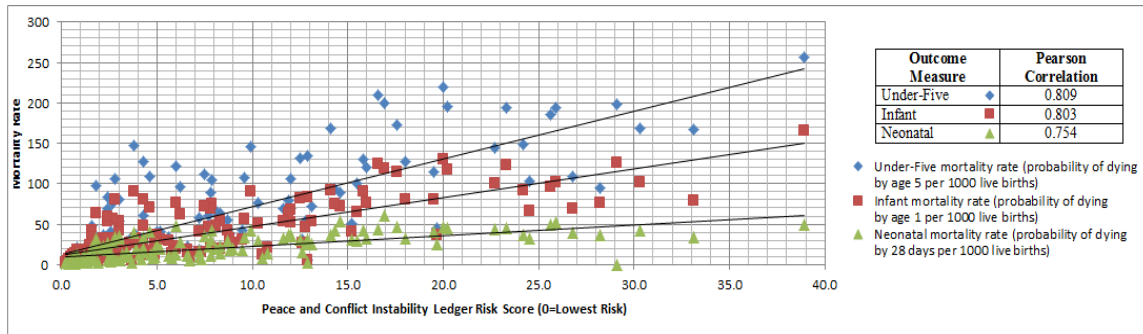


Figure 3. Peace and Conflict Instability Ledger- Neonatal/Infant/Under-Five Mortality Rate

Source: Created by the author.

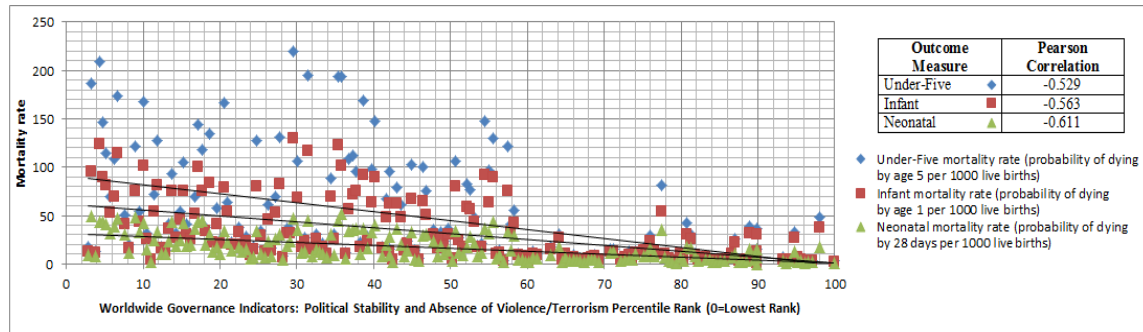


Figure 4. Worldwide Governance Indicators: Political Stability and Absence of Violence/Terrorism-Neonatal/Infant/Under-Five Mortality Rate

Source: Created by the author.

To explore the relationship among health sector interventions and the intended health outcomes (decreased child mortality rates), a Pearson correlation was performed between each output and each outcome measure. With the exception of percentage of children under-five sleeping under insecticide treated bednets, each correlation is statistically significant ($p < 0.001$). This suggests an expected correlation between public health interventions and the intended health outcomes (greater success of intervention associated with lower child mortality rate). See table 10 and figures 5, 6, and 7 for a

summary of the analysis. It is possible the lack of data affected the correlation between the percentage of children under-five sleeping under insecticide treated bednets and the mortality rates. It is recognized that the public health interventions are likely interrelated (e.g. higher density of nurses and physicians would likely be correlated with higher percentage of immunizations administered) and that there may be relationships among the output measures that were not analyzed, but the intent of the analysis was to simply introduce the possibility of using such metrics for measuring progress toward the desired health outcome and end-state. Again, while there are insufficient data and analysis to suggest any causal link between public health interventions and child mortality rates, the findings do support what has been suggested in current literature.

Table 10. Pearson Correlation of Child Mortality Rates and Output Measures			
Output Measures	Mortality Rate		
	Neonatal	Infant	Under-Five
Measles (MCV) immunization coverage among 1-year-olds (%)	-0.612	-0.617	-0.620
Physician density (per 10,000 population)	-0.633	-0.603	-0.573
Nursing and midwifery personnel density (per 10,000 population)	-0.606	-0.561	-0.532
Births attended by skilled health personnel (%)	-0.801	-0.787	-0.777
Children aged <5 years sleeping under insecticide treated bednets (%)	0.117*	0.082*	0.115*
Proportion of population using improved drinking-water sources (%)	-0.792	0.824	-0.826
Proportion of population using improved sanitation facilities (%)	-0.807	0.798	-0.781

*p value>0.05 = no correlation (may be due to missing data), otherwise p values < 0.001

Source: Created by the author.

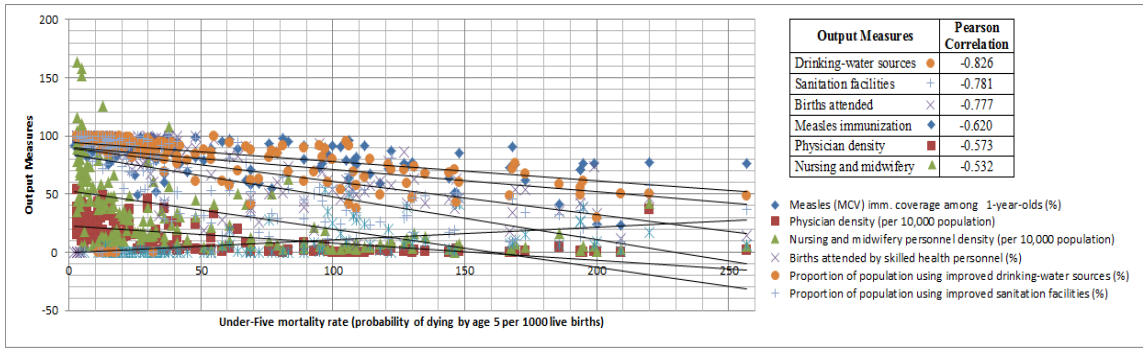


Figure 5. WHO Output Metrics-Under-Five Mortality Rate

Source: Created by the author.

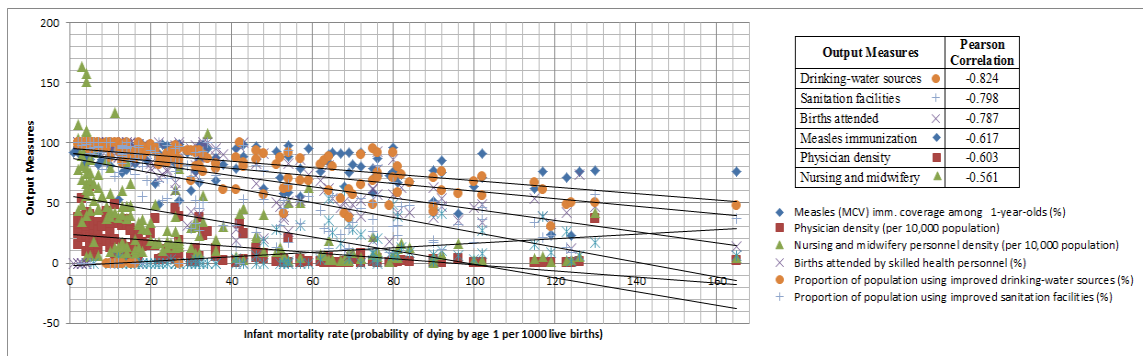


Figure 6. WHO Output Metrics-Infant Mortality Rate

Source: Created by the author.

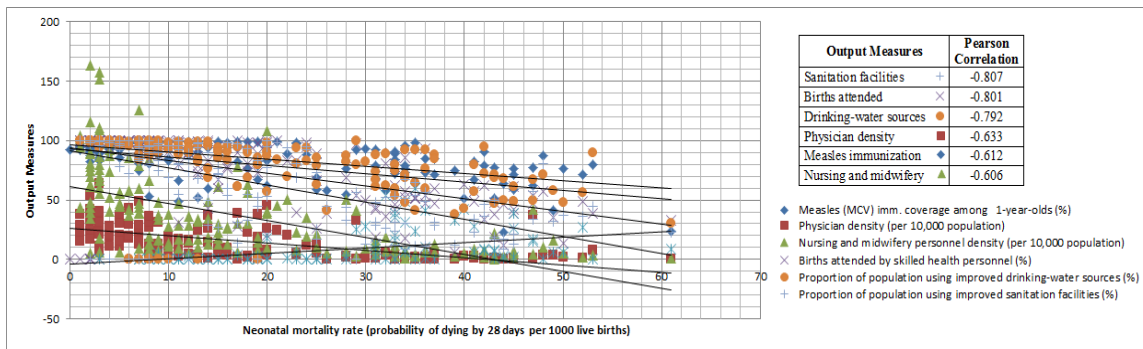


Figure 7. WHO Output Metrics-Neonatal Mortality Rate

Source: Created by the author.

Though an admittedly ~~naive~~ "naive" data analysis, this preliminary review of publically available output (MOPs) and outcome (MOEs) indicators, and state fragility indices (strategic end-state) provides a basis for recommending baseline measures for a logical framework that can serve to integrate the relatively shorter term military and longer-term civilian organization public health interventions before, during, and after stability operations (table 11).

Conclusion

Given the premise that military health services-related activities are intended to positively affect the strategic end-state of increased state stability (decreased fragility), the literature suggests measuring efforts to reduce child mortality can direct appropriate interventions during stability operations. Based on the evidence presented, public health interventions such as improving drinking water sources, sanitation, and skilled attendants at birth, not direct medical care, are the most likely to positively affect child mortality. While it is generally accepted that health outcomes such as the under-five mortality rate are the best measure of successful public health interventions, this analysis suggests the effects of short term military public health interventions are likely best assessed through outputs of the interventions (MOPs) that are known to correlate with the under-five mortality rate (MOE), indicators of which are freely available via the internet through the WHO. The under-five mortality rate is thought to provide the best measure of the overall health of the population, however it best serves as a comparatively long-term outcome metric. The infant and neonatal mortality rates can provide shorter-term metrics against which the success of military public health interventions can be assessed. By using the same standardized health indicators as the civilian sector, there is opportunity to not only

coordinate military and civilian organization public health interventions before, during, and after stability operations, but to assure measures of success will be aligned to the same desired outcome.

State fragility indices, while not yet fully mature, are also publically available and can provide a comprehensive strategic end-state metric against which military health service-related interventions, as part of the Humanitarian Assistance and Public Well-being line of effort, and other stability operations efforts can be assessed. This can provide the opportunity to align the breadth of stability operations efforts to a common end-state while also objectively measuring the impact of actions spanning lines of effort.

A logical framework for measurement based on the evidence presented is provided (table 11) as a basis for synchronizing military and civilian public health interventions. This framework is intended to be part of a much larger model based on the five general sectors for stability operations (figure 8). While the suggested logical framework includes only (some of those) interventions believed to reduce infant mortality, the same framework can be used for all other military public health interventions intended to affect other outcomes. Furthermore, this logical framework can also be used to coordinate and measure all other military and civilian interventions across all stability operations sectors from a whole-of government perspective. The logical framework and Integrated Planning and Assessment Framework Model will be discussed in greater detail in chapter 5.

In summary, of existing publicly available measures, those which are likely to be most useful to assess the impact of military public health interventions during stability operations are associated with child mortality, assessing actions taken and measuring task

accomplishment to improve this indicator of population health world-wide. While not all such measures are available at the country level for all countries, those that have been demonstrated to support the Millennium Development Goals are compiled by the World Health Organization and are freely available online.

¹JP 3-07, II-33, A-1.

²JP 3-0, GL-20.

³Chairman, Joint Chiefs of Staff, Joint Publication (JP) 5-0, *Joint Operation Planning* (Washington DC: Government Printing Office, 2006), III-60, III-61.

⁴Headquarters, Department of the Army, Field Manual (FM) 5-0, *The Operations Process* (Washington DC: Government Printing Office, 2010), 6-3, H-2, H-5.

⁵David Pencheon, “The Good Indicators Guide: Understanding how to use and choose indicators” (The Association for Public Health Observatories, Institute for Innovation and Improvement, United Kingdom, 2008), <http://www.apho.org.uk/resource/item.aspx?RID=44584> (accessed 14 May 2011), 5, 9.

⁶FM 5-0, H-2.

⁷U.S. Army’s Center of Excellence for Stability and Peace Operations at the Strategic and Operational levels; subordinate to the Army War College.

⁸United States Institute of Peace, *Guiding Principles for Stabilization and Reconstruction* (Washington, DC, United States Institute of Peace Press, United States Institute of Peace United States Army Peacekeeping and Stability Operations Institute, 2009), http://www.usip.org/files/resources/guiding_principles_full.pdf (accessed 15 May 2011), 1-6, 2-9, 5-32.

⁹The “Framework for Societies Emerging from Conflict” is designed to be shared by leaders from the international community (military, government, NGO, international organizations, and private sector), as well as by domestic leaders in the host nation.

¹⁰John Agoglia, Michael Dziedzic, and Barbara Sotirin, eds., *Measuring Progress in Conflict Environments (MPICE) A Metrics Framework* (Washington, DC: United States Institute of Peace Press, 2010), http://www.usip.org/files/resources/MPICE_final_complete%20book%20%282%29.pdf (accessed 15 May 2011), xii, x, xvi.

¹¹WHO, *Everybody’s Business*, v, 3.

¹²*Ibid.*, vi, viii, xi.

- ¹³Sphere Project Handbook, 5, 9.
- ¹⁴Ibid., 50.
- ¹⁵Ibid., 291.
- ¹⁶Ibid., 82, 296, 309.
- ¹⁷USAID, –Sustaining Health Gains,” 9.
- ¹⁸World Health Organization (WHO), *World Health Statistics 2010* (Geneva, Switzerland, WHO Press, 2010), http://www.who.int/whosis/whostat/EN_WHS10_Full.pdf (accessed 15 May 2011), 8.
- ¹⁹World Health Organization (WHO), –World Health Statistics 2010 Indicator Compendium Interim Version,” http://www.who.int/whosis/indicators/WHS10_IndicatorCompendium_20100513.pdf (accessed 15 May 2011).
- ²⁰USAID, –Sustaining Health Gains,” 51.
- ²¹Himmler, 13, 14.
- ²²Sphere Project Handbook, 310.
- ²³United States Institute of Peace, *Guiding Principles for Stabilization and Reconstruction*, 10-171, 10-172.
- ²⁴Jones et al., *Securing Health*, 296.
- ²⁵Monty G. Marshall and Benjamin R. Cole, –Global Report 2009: Conflict, Governance, and State Fragility” (Severn, MD, Center for Systemic Peace, 7 December 2009), <http://www.systemicpeace.org/Global%20Report%202009.pdf> (accessed 15 May 2011), 24.
- ²⁶Javier F. Mata and Sebastian Ziaja, –User’s Guide on Measuring Fragility” (German Development Institute, United Nation Development Programme. 2009), http://www.undp.org/oslocentre/docs09/Fragility_Users_Guide_%28web%29.pdf (accessed 15 May 2011), 1, 8, 23, 26.
- ²⁷Ibid., 33, 28.
- ²⁸Ibid., 35, 37.
- ²⁹Nada J. Pavlovic, et al., –Indicators and Indices of Conflict and Security: A Review and Classification of Open-Source Data” (Defense Research and Development Canada, Toronto Canada, September 2008), <http://www.dtic.mil/cgi-bin/> (accessed 15 May 2011), 5.

³⁰Ibid., 4.

³¹Ibid., iii.

³²Goldstone, et al., –State Failure Task Force Report: Phase III Findings” (McLean, VA: Science Applications International Corporation, 30 September 2000), <http://globalpolicy.gmu.edu/pitf/SFTF%20Phase%20III%20Report%20Final.pdf> (accessed 15 May 2011), 19, iv, 50, 51.

³³W. K. Kellogg Foundation, *Logic Model Development Guide* (Battle Creek, MI: W. K. Kellogg Foundation, January 2004), <http://www.compact.org/wp-content/uploads/2010/03/LogicModelGuidepdf1.pdf> (accessed 15 May 2011), iii, 3, 8.

³⁴Drifmeyer and Llewellyn, *Toward More Effective Military Humanitarian Assistance*, 165, 166.

³⁵Securing Health—Lessons Learned From Nation-Building, 295, 297.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

There is broad consensus that attention to health sector needs plays an important role in addressing the causes of state fragility, whether in an attempt to avoid conflict, during conflict, or post-conflict. It is widely recognized that basic medical and public health infrastructure improvement and development, while monitoring health and health risk indicators such as child mortality rate, can directly counter not only medical but general threats. Yet U.S. military health services-related activities in support of stability operations have not been demonstrated to improve stability and security in regions where such operations have been conducted. This is thought to be because little has been done to positively affect the underlying health-related problems and infrastructure over the long-term. There appears to be a gap in the actual practice of health services-related activities during stability operations and what is recommended in very latest doctrine and the literature, with a tendency to provide mostly direct care services rather than public health interventions.

Military health services-related activities during stability operations have traditionally been primarily short term, targeting acute health and health infrastructure problems, direct patient care-centric, and not intentionally aligned to international standards and outcomes. Civilian-based health sector programs, on the other hand, are generally long term, public health-centric, consist of international stakeholders, and tend to align efforts and measures of success to international standards. It is generally understood that simultaneously addressing short and long term health sector needs while

continually assessing outcomes is critical to success in stability operations. Given the doctrinal expectations that military forces should be prepared to initially lead stability operations efforts intended to positively impact the indigenous health sector capacity until transition to host nation, multinational, or international governmental and non-governmental resources is possible, there is clearly an opportunity for unity of health sector efforts that can serve both military and civilian stakeholders.

Based on the premise that medical and public health interventions during stability operations are intended to improve those health sector issues that may affect state stability, the available evidence suggests efforts to reduce child mortality rates are the most likely to be beneficial. While health outcome metrics such as the under-five mortality rate are recommended as best for assessing long-term effectiveness, relatively short term military health services-related interventions are likely best assessed through metrics that more directly measure the output of activities known to affect child mortality. Such metrics include immunization coverage among 1-year-olds, percentage of births attended by skilled health personnel, number and quality of trained doctors and nurses, and percentage of the population using improved drinking-water sources and sanitation facilities. These interventions are not reflective of direct-care services; rather they are fundamental public health activities. This would suggest that a focus on military public health interventions rather than the historic tendency to provide direct care services is more likely to positively affect the desired strategic end-state. It is important to emphasize that while the under-five mortality rate is generally thought to provide the best measure of the overall health of the population, infant and neonatal mortality rates may provide metrics against which the success of military public health interventions can

be more readily assessed. Furthermore, by using the same standardized health indicators as the civil sector, there is opportunity to not only coordinate military and civilian organization public health interventions before, during, and after stability operations, but to also assure measures of success will be aligned to the same desired outcome.

Discussion

To effectively plan and monitor the collaborative efforts of military and civilian-based public health interventions during stability operations, a common framework is necessary. It is understood that such an assessment framework should support health assistance over three categories: inputs, the resources necessary for health reconstruction; outputs, the results of interventions such as trained personnel or functional facilities; and the (health) outcomes that are intended to directly affect the population, reflecting the consequences of interventions. A logical framework is intended to address and align inputs, outputs, and outcomes, providing a formal basis for planning and monitoring activities. While it has been suggested that the DoD consider adopting a logical framework for use in stability operations, and though varying parts of such a framework have been discussed, the literature to date has made no comprehensive and deliberate recommendation, and no specific recommendation using reduced child mortality as the desired outcome.

Table 11 provides a recommended Logical Framework for the Health Sector, compiled from current literature, using publically available health indicators and state fragility indices. Starting with the end-state (Social Well-Being) working from right to left, the “Impacts” column states the condition (Access To and Delivery Of Basic Needs Services) expected to be affected by health sector activities. The long and short term

–Outcomes” columns state the desired health outcomes (decreased under-five, infant, and neonatal mortality rate) thought to reflect the success of health sector activities intended to positively affect the end-state. The –Outputs” column states the specific indicators that will be used to measure the accomplishment of the health sector activities, in this case public health interventions. While this is not a comprehensive list, it does reflect consistently recommended measures of those activities expected to decrease child mortality, is validated by preliminary data analysis, and does represent freely available indicators from the WHO. The –Activities/Processes” column describes those public health interventions recommended as expected to decrease child mortality. The –Resources/Inputs” column reflects the components of health sector capacity that need to be assessed in order to understand the gap between current state and desired end-state, based on the internationally recognized Millennium Development Goals standards, and specific to the host nation.

The Logical Framework for the Health Sector in its entirety provides a practical recommendation of how to improve the existing host nation health sector capacity in order to achieve the desired end-state, social well-being, during stability operations. Figure 8 extends this more tactical and operational framework to include its relationship to a more operational and strategic assessment framework, using the –Strategic Framework for Stabilization and Reconstruction” as described by the U.S. Army Peacekeeping and Stability Operations Institute.

**Table 11. Logical Framework for the Health Sector:
Military Public Health Intervention During Stability Operations**

Resources/ Inputs	Activities/ Processes	Outputs	Outcomes		Impacts
			Short Term	Long Term	
<ul style="list-style-type: none"> - Wells/potable water collection/storage systems - Host nation capacity to procure and distribute medical supplies. - Access to primary health care - Care for < 5 yoa: watery diarrhea/ Immunizations - Prevention /treatment capacity of endemic diseases - Organizations - Other resources (human, organizational, financial, facilities, equipment, & supplies 	<ul style="list-style-type: none"> - Develop wells/ potable water collection/storage systems - Improve host nation capacity to procure and distribute medical supplies. - Improve access to primary health care: services, economic, social and cultural accessibility and acceptability. - Improve care for children under-five targeting immunizations and treatment of acute watery diarrhea (nutritional support and oral rehydration therapy). - Prevention /treatment of endemic diseases, targeting TB, Malaria and HIV. 	<ul style="list-style-type: none"> - (%) Measles immunization coverage among 1-year-olds * - (%) Births attended by skilled health personnel* - (%) Children under-five sleeping under insecticide-treated nets¹ - (%) Population using improved drinking-water sources* - (%) Population using improved sanitation* - Number/quality of trained doctors & nurses*** 	<ul style="list-style-type: none"> - Decreased newborn mortality rate** - Decreased infant mortality rate** 	<ul style="list-style-type: none"> - Decreased under-five mortality rate* 	<ul style="list-style-type: none"> Social Well-Being: Access To and Delivery Of Basic Needs Services

*WHO Health-related MDM goals indicator

**WHO Global health indicator

***WHO Health workforce, infrastructure and essential medicines indicator

¹ Not available for all countries as of 2011 WHO data

Source: Author adapted from multiple sources cited in table 7.

Viewing the Integrated Planning and Assessment Framework Model (figure 8) from left to right, given the strategic end-state of a stable state, the U.S. Military Health System (and civilian public health organizations) makes certain assumptions based on preliminary intelligence as part of an attempt to understand the health sector problem in the host nation. These assumptions then should be balanced against the host nation goals, stakeholder expectations, and available resources. Once an understanding of the current

environment has been developed, with attention to host nation needs, expectations, and priorities, a formal assessment of the existing health sector capacity can be conducted as a basis for determining appropriate interventions. These activities and processes are continually assessed as outputs (MOPs). The health-sector interventions are in turn compared against the intended health outcomes, measuring their effectiveness (MOEs). While the under-five mortality rate cannot be measured during the relatively short military deployments, the neonatal mortality rate (the probability of dying by 28 days), which appears to have a similar relationship to state fragility (table 9 and figures 3 and 4), can serve at the least as a shorter-term proxy measure of military public health intervention effectiveness.

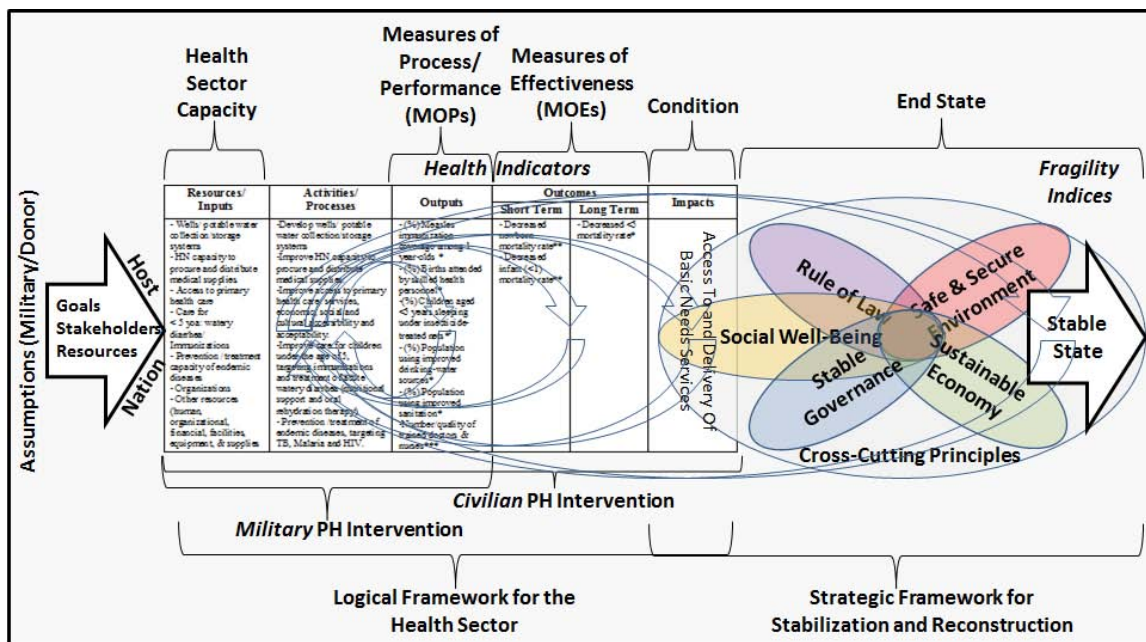


Figure 8. Integrated Planning and Assessment Framework Model

Source: Created by the author.

The Integrated Planning and Assessment Framework Model (figure 8) depicts the complete alignment of military and civilian humanitarian organization health sector assumptions before, during, or immediately post-conflict, with host nation needs, expectations, and priorities, and the public health activities expected to positively affect the desired outcome and eventually the end-state. The curvilinear arrows reflect the responsibility for continual assessment of military public health interventions and their effect on health outcomes, conditions related to the end-state, and the end-state itself, through MOPs (outputs) and MOEs (outcomes). It is expected that if activities anticipated to positively impact health outcomes are found not to be effective, such continual assessment will provide the evidence for considering more effective interventions, thus completing the assessment and learning cycle.

While this framework is not inclusive of all possible effective public health interventions across the range of regions, countries, and stability operations, it provides a baseline set of recommended activities and associated measures, all of which are freely available from reputable sources (see the detailed discussion in chapter 4). For the measures to be timely and meaningful, however, local capture will likely be necessary. Implicit in this framework is the responsibility to also report health data, in coordination with the host nation, to international stewards such as the WHO. While retrospective analysis of interventions based on this logical framework is possible, the true power lies in prospective public health program planning and assessment.

Future Research

Through the process of this research for this paper several opportunities for future research using the WHO health indicators have become apparent. In an effort to better

understand the power of relationship among output and outcome measures, a more in-depth analysis covering the past 10 years should be conducted. The WHO captures other necessary population level data that will be necessary for a more thorough analysis.

To gain a sense of the impact of U.S. military health services-related interventions over time, it is recommend that an analysis of the relationship among the output and outcome metrics over the past 10 years be conducted by country, grouped into three categories: those with continued conflict over the past 10 years in which the U.S. has conducted stability operations (e.g. Iraq and Afghanistan); any country in which the U.S. has conducted humanitarian assistance missions (excluding those where stability operations have been conducted); and all other countries. If practical to subdivide the remaining countries by levels of conflict, that may also be useful.

To best evaluate the impact of U.S. military health services-related interventions, a prospective study should be conducted, starting soon as possible, in those countries the U.S. is currently conducting stability operations and those in which the U.S. conducts any type of health-related humanitarian assistance. To accomplish this it will be necessary to ensure data can be readily and reliably captured. Fortunately the Military Health System has an electronic health record that is deployed in garrison world-wide (AHLTA) and for which there is a theater-deployable version (AHLTA-Theater) and a mobile version (AHLTA-Mobile).

Future research should also include the use of AHLTA to capture and monitor output and outcome metrics to assess the effectiveness of military health services-related efforts during stability operations and any humanitarian assistance missions. Future research should also consider the practical scope of using AHLTA (to include use by

international civilian organizations and the host nation). A unified military and civilian public health effort requires a common means to capture and monitor the necessary data.

Recommendations

The Logical Framework for the Health Sector described in this paper provides a formal basis for planning appropriate military health services-related activities, as part of an integrated effort with civilian health sector actors, and assessing their impact on the desired health outcome and strategic end-state. The evidence which has formed the framework suggests public health-related, not direct patient care-related activities, are more likely to positively affect the desired outcome, reduced child mortality, which is an indicator of improved social well-being and thus fundamental to successful stability operations. While measuring the under-five child mortality rate is an appropriate measure of effective health sector interventions, the timeline for adequate assessment extends beyond conventional stability operations. The neonatal mortality rate, however, provides an opportunity for the military to measure health outcomes during stability operations, and appropriately related output metrics offer more timely feedback in determining the effectiveness of public health interventions.

It is thus recommended that the Logical Framework for the Health Sector be incorporated as a planning tool and as a means for aligning and assessing military and civilian public health organization interventions during stability operations. The measures of effective military public health interventions during stability operations include, but are not limited to: neonatal mortality rate; proportion of the population using improved sanitation and drinking-water sources; percentage of births attended by skilled health

personnel; physician, nursing and midwifery density; and percentage of measles immunization coverage among 1-year-olds.

BIBLIOGRAPHY

Books

Wilensky, Robert J. *Military Medicine to Win Hearts and Minds: Aid to Civilians in the Vietnam War*. Lubbock, TX: Texas Tech University Press, 2004.

Periodicals

Beitler, Alan L., Jennifer L Junnila, and James H Meyer Jr. "Humanitarian Assistance in Afghanistan: A Prospective Evaluation of Clinical Effectiveness," *Military Medicine* 171, no. 9 (September 1, 2006): 889-893.

<http://www.proquest.com.lumen.cgscarl.com/> (accessed 14 May, 2011).

Drifmeyer, Jeff, and Craig Llewellyn. "Toward More Effective Humanitarian Assistance." *Military Medicine* 169, no. 3 (1 March 2004): 161-8,
<http://www.proquest.com.lumen.cgscarl.com/> (accessed 25 November 2010).

Himmler, Bruno. "Humanitarian Assistance and Capacity Development: Unifying Efforts of DoD and the Civilian Community." *Peacekeeping and Stability Operations Institute (PKSOI) Bulletin* 2, no. 3 (April 2010). http://pksoi.army.mil/PKM/publications/bulletin/volume2issue3/Bulletin_Volume2_issue_3.pdf (accessed 14 May 2011).

Lougee, Douglas. "Can We Build a Better Medical Civic Assistance Program? Making the Most of Medical Humanitarian Civic Assistance Funding." *The DISAM Journal of International Security Assistance Management* 29, no. 3 (February 2007). http://www.disam.dscamilitary.com/pubs/Vol%2029_1/Lougee.pdf (accessed 15 May 2011).

Murphy, Sean, and Dean Agner, "Cooperative Health Engagement in Stability Operations and Expanding Partner Capability and Capacity." *Military Medicine* 174, no. 8 (1 August 2009): iii-vii. <http://www.proquest.com.lumen.cgscarl.com/> (accessed 15 May 2011).

Government Documents

Chairman, Joint Chiefs of Staff, Joint Publication (JP) 3-57, *Civil-Military Operations*. Washington, DC: Government Printing Office, 2008.

——— Joint Publication (JP) 4-02, *Health Service Support*. Washington, DC: Government Printing Office, 31 October 2006.

——— Joint Publication (JP) 3-29, *Foreign Humanitarian Assistance*. Washington, DC: Government Printing Office, 2009.

———Joint Publication (JP) 3-0, *Joint Operations*. Washington, DC: Government Printing Office, 2010.

———Joint Publication (JP) 5-0, *Joint Operation Planning*. Washington, DC: Government Printing Office, 2006.

———Joint Publication (JP) 3-07 (Draft), *Stability Operations*. Washington, DC: Government Printing Office, 22 April 2010.

Department of Defense. Department of Defense Instruction (DoDI) 2205.02, *Humanitarian and Civic Assistance (HCA) Activities*. Washington, DC: Government Printing Office, 2008.

———. Department of Defense Instruction 3000.05, *Stability Operations*. Washington, DC: Government Printing Office, 16 September 2009.

———. Department of Defense Instruction 6000.16, *Military Health Support for Stability Operations*. Washington, DC: Government Printing Office, 17 May 2010.

Headquarters, Department of the Army. Field Manual (FM) 5-0, *The Operations Process*. Washington, DC: Government Printing Office, 2010.

The White House. *National Security Strategy*. Washington, DC: Government Printing Office, May 2010.

Other Sources

Agoglia, John, Michael Dziedzic, and Barbara Sotirin, eds. *Measuring Progress in Conflict Environments (MPICE) A Metrics Framework*. Washington, DC, United States Institute of Peace Press, 2010. http://www.usip.org/files/resources/MPICE_final_complete%20book%20%282%29.pdf (accessed 15 May 2011).

Alva, Soumya, Eckhard Kleinau, Amanda Pomeroy, and Kathy Rowan. —“Measuring the Impact of Health Systems Strengthening: A Review of the Literature.” Report prepared by Analysis, Information Management & Communications (AIM) Activity for the U.S. Agency for International Development (USAID), November 2009). http://www.usaid.gov/our_work/global_health/hs/publications/impact_hss.pdf (accessed 14 May 2011).

Armstrong, Kimberly K. —“Army Medical Department Support to Stability Operations.” Strategy Research Project, U.S. Army War College, 2007. <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA469380> (accessed 15 May 2011).

Association of the United States Army. *The U.S. Army’s Role in Stability Operations*. Institute of Land Warfare, Torchbearer National Security Report, October 2006.

- <http://www.ausa.org/publications/torchbearercampaign/tnsr/Documents/TB-StabOps.pdf> (accessed 15 May 2011).
- Bogdandy, Armin von, Stefan Häußler, Felix Hanschmann, and Raphael Utz. *State-Building, Nation-Building, and Constitutional Politics in Post-Conflict Situations: Conceptual Clarifications and an Appraisal of Different Approaches*. Netherlands, Max Planck Yearbook of United Nations Law, Volume 9, 2005. http://www.mpil.de/shared/data/pdf/pdfmpunyb/bogdandyua_9_579_613.pdf (accessed 14 May 2011).
- Bryan, Edward L. –*Medical Engagement: Beyond the MEDCAP.*” Monograph, School of Advanced Military Studies, U.S. Army Command and General Staff College, 2008. <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA485508> (accessed 15 May 2011).
- Clunan, Anne L. ed. –*Civil-Military Medicine: On Dangerous Ground.*” Monterey, CA: Center for Stabilization & Reconstruction Studies, Naval Postgraduate School, March 2006. http://www.csrs-nps.org/logistica/public/docs/game_report.pdf (accessed 14 May 2011).
- Dobbins, James, Seth G. Jones, Keith Crane, and Beth Cole Degrasse. *The Beginner’s Guide To Nation-Building*. RAND Corporation, National Security Research Division, 2007. http://www.rand.org/pubs/monographs/2007/RAND_MG557.pdf (accessed 14 May 2011).
- Drifmeyer, Jeff, and Craig Llewellyn. *U.S. Participants Perspectives on Military Medical Humanitarian Assistance*. Measures of Effectiveness, Centers for Disaster and Humanitarian Assistance Medicine (CDHAM) publication 02-04, 2004. <http://odhap.cdham.org/> (accessed 13 December 2010).
- Goldstone, Jack A., Ted Robert Gurr, Barbara Harff, Marc A. Levy, Monty G. Marshall, Robert H. Bates, David L. Epstein, Colin H. Kahl, Pamela T. Surko, John C. Ulfelder, Jr., and Alan N. Unger. –*State Failure Task Force Report: Phase III Findings.*” McLean, VA: Science Applications International Corporation, 30 September 2000. <http://globalpolicy.gmu.edu/pitf/SFTF%20Phase%20III%20Report%20Final.pdf> (accessed 15 May 2011).
- Gurel, Ogan. –*Medical Diplomacy: A Brief Outline.*” Aesis Group Medical Diplomacy Blog. 8 September 2007. <http://www.scribd.com/doc/8057665/Medical-Diplomacy-a-Brief-Outline> (accessed 14 May, 2011).
- Institute for Alternative Futures. –*The AMEDD [Army Medical Department] Futures Project 2039: Phase 2 Final Report,*” 30 June 2009. http://www.altfutures.org/pubs/govt/AMEDD_Futures_2039_Project_072909.pdf (accessed 14 May 2011).
- Jones, Seth G., Lee H. Hilborne, C. Ross Anthony, Lois M. Davis, Federico Girosi, Cheryl Benard, Rachel M. Swanger, Anita Datar Garten, and Anga Timilsina.

- Health System Reconstruction and Nation-Building*. RAND Corporation, Center for Domestic and International Health Security, 2007. http://www.rand.org/pubs/research_briefs/2007/RAND_RB9237.pdf (accessed 11 May 2011).
- . *Securing Health: Lessons from Nation-Building Missions*. RAND Corporation, Center for Domestic and International Health Security, 2006. http://www.rand.org/pubs/monographs/2006/RAND_MG321.pdf (accessed 14 May 2011).
- Menocal, Alina Rocha, Timothy Othieno, and Alison Evans. “The World Bank in Fragile Situations.” Overseas Development Institute, Issues Paper, July 2008. <http://www.odi.org.uk/resources/download/3319.pdf> (accessed 14 May 2011).
- Marshall, Monty G., and Benjamin R. Cole. “Global Report 2009: Conflict, Governance, and State Fragility.” Center for Systemic Peace, Severn, Maryland, 7 December 2009. <http://www.systemicpeace.org/Global%20Report%202009.pdf> (accessed 15 May 2011).
- Mata, Javier F., and Sebastian Ziaja. “User’s Guide on Measuring Fragility.” German Development Institute, United Nation Development Programme. 2009. http://www.undp.org/oslocentre/docs09/Fragility_Users_Guide_%28web%29.pdf (accessed 15 May 2011).
- Newbrander, William. *Providing Health Services in Fragile States*. Arlington, VA: Basic Support for Institutionalizing Child Survival (BASICS) for the United States Agency for International Development (USAID), 2006. http://www.basics.org/indexpre_docs/Providing_Health_Services_in_Fragile_States_Newbrander_Final.pdf (accessed 15 May 2011).
- Pavlovic, Nada J., Lisa Casagrande Hoshino, David R. Mandel, and A. Walter Dorn. “Indicators and indices of conflict and security: A Review and Classification of Open-Source Data.” Defense Research and Development Canada, Toronto Canada, September 2008. <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA494833> (accessed 15 May 2011).
- Pencheon, David. “The Good Indicators Guide: Understanding how to use and choose indicators.” The Association for Public Health Observatories, Institute for Innovation and Improvement, United Kingdom, 2008. <http://www.apho.org.uk/resource/item.aspx?RID=44584> (accessed 14 May 2011).
- Pruden, Paul W. “Should Medical Humanitarian and Civic Assistance Activities Focus on Building Public Health Capacity in Africa to Better Influence Theater Security Cooperation Objectives?” Thesis, Naval War College, 2006. <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA463935&Location=U2&doc=GetTRDoc.pdf> (accessed 14 December 2010).

- Reynolds, Jeffery C., and Kent B. Hughes. "Contagion and Stability," U.S. War College, Center for Strategic Leadership, Issues Paper 5-01, May 2001. <http://www.csl.army.mil/usacsl/Publications/CSL%20Issue%20Paper%205-01.pdf> (accessed 11 May 2011).
- Sphere Project. *Humanitarian Charter and Minimum Standards in Humanitarian Response*. Sphere Project Handbook. United Kingdom: Practical Action Publishing, 2011. <http://www.sphereproject.tv/p/handbook.html> (accessed 14 May 2011).
- United Nations. "The Millennium Development Goals Report 2010." <http://www.un.org/millenniumgoals/pdf/MDG%20Report%202010%20En%20r15%20-low%20res%2020100615%20-.pdf> (accessed 15 May 2011).
- United States Agency for International Development (USAID). "Sustaining Health Gains—Building Systems." October 2009. Washington, DC: USAID. http://pdf.usaid.gov/pdf_docs/PDACN511.pdf (accessed 14 May 2011).
- United States Institute of Peace. *Guiding Principles for Stabilization and Reconstruction*. Washington, DC, United States Institute of Peace Press, United States Army Peacekeeping and Stability Operations Institute, 2009. http://www.usip.org/files/resources/guiding_principles_full.pdf (accessed 15 May 2011).
- W. K. Kellogg Foundation. *Logic Model Development Guide*. Battle Creek, I: W. K. Kellogg Foundation, January 2004. <http://www.compact.org/wp-content/uploads/2010/03/LogicModelGuidepdf1.pdf> (accessed 15 May 2011).
- World Health Organization (WHO). *Everybody's Business Strengthening Health Systems To Improve Health Outcomes Who's Framework For Action*. Geneva, Switzerland: WHO Press, 2007. http://www.who.int/healthsystems/strategy/everybodys_business.pdf (accessed 14 May 2011).
- . *Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and Their Measurement Strategies*. Geneva, Switzerland, WHO Press, 2010. http://www.who.int/entity/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf (accessed 14 May 2011).
- . *World Health Statistics 2010*. Geneva, Switzerland, WHO Press, 2010. http://www.who.int/whosis/whostat/EN_WHS10_Full.pdf (accessed 15 May 2011).
- . "World Health Statistics 2010 Indicator Compendium Interim Version." http://www.who.int/whosis/indicators/WHS10_IndicatorCompendium_20100513.pdf (accessed 15 May 2011).

Internet Only Sources

International Medical Volunteers Association. "The Major International Health Organizations." <http://www.imva.org/Pages/orgfrm.htm> (accessed 14 May 2011).

INITIAL DISTRIBUTION LIST

Combined Arms Research Library
U.S. Army Command and General Staff College
250 Gibbon Ave.
Fort Leavenworth, KS 66027-2314

Defense Technical Information Center/OCA
825 John J. Kingman Rd., Suite 944
Fort Belvoir, VA 22060-6218

Louis A. DiMarco, Ph.D.
Department of Military History
USACGSC
100 Stimson Ave.
Fort Leavenworth, KS 66027-2301

MG William D. R. Waff, M Div.
Commander, 99th Regional Support Command
5231 South Scott Plaza
Joint Base McGuire-Dix
Lakehurst, NJ 98649

William T. Pugh, MPA
Department of Joint, Interagency, and Multinational Operations
USACGSC
100 Stimson Ave.
Fort Leavenworth, KS 66027-2301