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A bedside communication tool did not improve the alignment of a multidisciplinary team's goals for intensive care unit patients☆,☆☆,★

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Abstract

Purpose: Establishing well understood daily patient care goals should improve healthcare team (HCT) communication, reduce errors, and improve patient outcomes. The purpose of this study was to test the hypothesis that implementation of a daily goals "Door Communication Card" (DCC) would improve goal alignment between members of the HCT.

Methods: As part of a process improvement project, HCT members listed their top care goals for a patient on a given day. After initial data collection, DCCs were placed on patients' doors. Anyone was allowed to write on the card, but the "official" daily goals were recorded during multidisciplinary rounds. One month after introduction of the DCC, HCT members were re queried about their patients' care goals. Three reviewers independently compared goals and assessed their alignment before and after implementation of the DCC. We collected goals over a 4 month period and selected 5 random days before and after intervention for assessment.

Results: The goal alignment among HCT members was low before and did not improve after intervention (Attending to Nurse 55% vs 38%, *P* .02; Attending to Resident 60% vs 54%, *P* .43; Attending to Primary 35% vs 28%, *P* .45; Nurse to Attending 52% vs 36%, *P* .03; Nurse to Resident 55% vs 38%, *P* .04; Nurse to Primary 37% vs 27%, *P* .36; Resident to Attending 59% vs 54%, *P* .4; Resident to Nurse 56% vs 40%, *P* .05; Resident to Primary 36% vs 24%, *P* .16; Primary to Attending 34% vs 42%, *P* .44; Primary to Nurse 42% vs 35%, *P* .6; Primary to Resident 32% vs 34%, *P* .8).

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Conclusions: Alignment of daily patient care goals among HCT members is low overall and did not improve after implementing a DCC available to all team members. Further study to elucidate the mechanism by which daily goals forms improve patient care is required.
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1. Introduction

The delivery of modern intensive care unit (ICU) services is a complex process that requires a multidisciplinary approach to improve patient outcomes [1]. This multi-disciplinary approach represents a *team* of clinicians and support staff that work closely together, but often without shared priorities. This can lead to clinical situations in which a multi-disciplinary team is "a team of experts, [but] not an expert team" [2]. Ideally, all healthcare providers should share the same strategic vision for a patient's daily care plan. This shared vision should include goal alignment and should provide the most efficient and effective patient care. It makes sense that increasing the personnel involved in a patient's care increases the chance for communication errors [3]. Communication errors remain a major patient safety issue [4,5]. The ICU is a high-risk environment in which medical errors occur frequently [5-7].

Recent studies have demonstrated that the use of communications tools and daily goals can help facilitate the delivery of ICU services and decrease communication errors between care teams [8,9]. Establishing well-understood daily patient care goals should improve healthcare team (HCT) communication and may reduce errors in this environment. A trend toward improved communication and alignment of care goals has been demonstrated to decrease ICU length of stay [8,9]. These studies, however, did not assess whether an improved understanding of team goals was actually present as there was no objective measure of goal alignment. Our study was designed to test the hypothesis that implementation of a daily goals "Door Communication Card" (DCC) would improve goal alignment between members of the HCT by enabling them to identify the same daily care goals as being the most important ones to accomplish.

2. Methods

This performance improvement project was conducted in a 20-bed, surgical ICU in a 450-bed academic military medical center from December 2009 to April 2010. This unit functions as a "transitional type ICU," [10] where surgical services admit their patients to the unit and remain the service of record; all patients receive a mandatory critical care consult. In this environment, patients are co-managed by the surgical team and the ICU team. The ICU team, lead by a board certified intensivist, conducts multidisciplinary rounds (MDR) daily. These rounds include: the critical care attending, several physicians in training, mid-level providers (physician assistants and/or nurse practitioners), the patient's bedside nurse, a nutritionist, a pharmacist, a respiratory therapist, and student doctors and/or nurses according to their schedules. Representatives of the surgical team are typically absent from these rounds due to operating room schedules.

To establish a baseline frequency of goal alignment, we asked HCT members after MDR to "list and rank today's MAJOR goals" for each of their patients. Major goals were defined as the "the most important objectives/tasks to accomplish" for a given patient on the day of inquiry. Team members queried were the critical care attending leading MDR, the bedside nurse, the on-call ICU resident, and the primary surgical chief resident. We conducted these surveys on a random day of the typical work week (Monday through Friday) for 5 weeks. Random days were identified using a web based random number generator set to deliver a number between 1 and 5 that corresponded to a day of the week. These surveys were collected from all team members and given to the critical care administrator and were not shared with any of the other team members queried.

After initial data collection to establish baseline frequency of goal alignment, we began use of DCCs. These cards (Fig. 1) were placed on patients' doors (Fig. 2). Anyone was allowed, and all were encouraged, to write goals on the cards, but the "official" daily goals were recorded during MDRs. If goals that were agreed upon during MDR were contradictory to goals written on the DCC by HCTs before rounds (ie, the surgical team during their morning rounds), the ICU team called the surgical team to reconcile their differences.

One month after the introduction of the DCC, the same HCT members were re-queried about their goals in the same manner as the pre-intervention phase. No other process improvement projects or changes in daily ICU care or workflow occurred during this time period.

Three reviewers, a nurse (DA), an ICU attending (JP), and a medical resident (CA) independently assessed the results for goal alignment both before and after implementation of the DCC. Each reviewer examined all the data. Often, a HCT member would document a different number of care goals than other team members so alignment was assessed from both directions in each relationship. Discrepancies between reviewers were arbitrated by JP and a fourth reviewer (JL) using the rules in Table 1 and face-to-face discussion. If HCT members shared a goal, that goal was considered "aligned." If the goal was not shared, it was considered "non-aligned." Alignment was assessed from the dominant-to-subordinate member of the relationship (first listed to second listed member) using the chi-square test. For example, all nursing

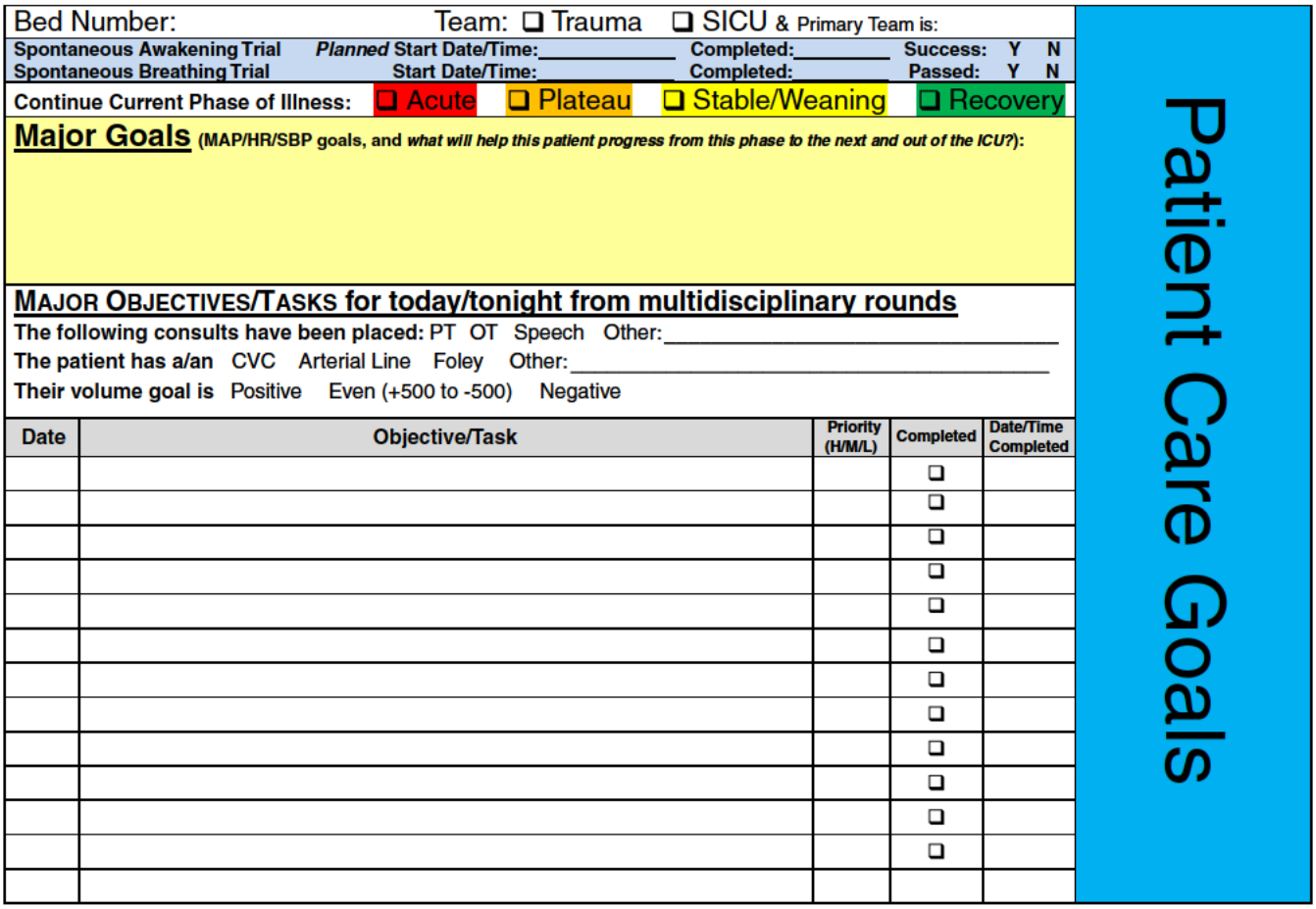

Fig. 1 A close up view of the DCC.

goals were compared to all resident goals in the "Nurse-Resident" relationship and vice-versa. Therefore, if a nurse recorded four goals but the resident only recorded 3 goals, one goal was immediately "non-aligned."

The primary outcome for this project was the difference between the alignment rates of goals between HCT members before and after the introduction of the DCC. There were 12 possible inter-provider relationships studied between the bedside nurses ("Nurse"), the on-call ICU residents ("Resident"), the chief surgical residents ("Primary Team"), and the critical care attending physicians ("CC Attending")..

3. Results

Alignment of daily patient care goals between HCT members was low overall and did not improve after implementing a DCC available to all team members (Table 2). On the whole, there was a decrease in goal alignment after implementation of the DCC. Four of these trends were statistically significant: the critical care attending to the bedside nurse ($P = .02$) and vice-versa ($P = .03$), the bedside nurse to the on-call resident and vice-versa $P = .05$). The relationships between the primary surgical team and the ICU team members all showed mild trends toward improved goal alignment. (Fig. 3)

4. Discussion

Our study demonstrated that HCTs in our ICU lack a shared understanding of the priorities for patient care on the days we evaluated team member perceptions of daily care goals. On average, individual team member's goals aligned with other team member's goals in less than 50% of recordings and this alignment did not improve after we initiated a targeted intervention to prominently display daily goals at the entrance to each patient's room using a "Door Communication Card" or DCC. This is a striking finding. Intuitively, team members feel that we are all delivering care with a common purpose and that our daily activities would align to support that common purpose. Team members should perceive care priorities similarly. In contrast to this assumption, our data suggests one of several alternatives: (*a*)

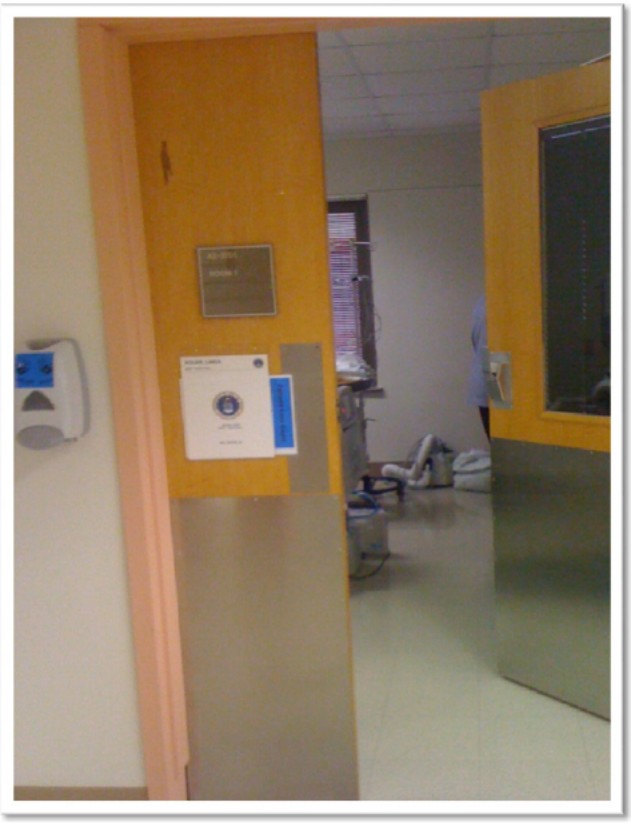

Fig. 2 Photograph showing the position of the DCC on the entry door to each patient room.

that individual team members function independently with little regard to the priorities or needs of other team members; (*b*) that the "major goals" for the day are so apparent that they are not perceived as most important and instead clinicians focus on smaller tasks to complete in order to achieve the larger, over-arching goal; (*c*) that our HCTs fail to focus

Table 1 Arbitration rules and examples

1. Overall, the GOAL is the most important thing: if two relationships demonstrate completion of same end state, the goals were aligned
2. The primary team provides a more general goal that the ICU team the goals were aligned
3. The primary team discussed "extubating the patient" and the ICU team discussed a "breathing trial" or "breathing trial and possible extubation," the goals were aligned
4. The CC Attending or the primary team specified specific values/numbers in the goal (eg, MAP 60 70) and the other compared relationship gave different values/number or a more general goal (eg, "control blood pressure"), the goals were aligned
5. The resident or nurse gave a more specific goal (eg, "start β blocker") than did the CC attending or the Primary Team (eg, "control hypertension"), the goals were aligned

The "ICU Team" consists of the CC Attending, the Resident, and the Nurse.

Table 2 Results

Comparison	Alignment before (%)	Alignment after (%)	*P* value Before vs. After
CC Attending to Nurse	55	38	.02
CC Attending to Primary Team	35	28	.45
CC Attending to Resident	60	54	.43
Nurse to CC Attending	52	36	.03
Nurse to Primary Team	37	27	.36
Nurse to Resident	55	38	.04
Primary Team to CC Attending	34	42	.44
Primary Team to Nurse	42	35	.6
Primary Team to Resident	32	34	.8
Resident to CC Attending	59	54	.4
Resident to Nurse	56	40	.05
Resident to Primary Team	36	24	.16

P value before vs. after represents the goal alignment between care providers before introduction of the DCC compared to after its introduction. Overall, there was no clinically relevant change in goal alignment after the process improvement project.

discussion and team activities around well identified care goals (ie, we do not talk about "goals" we only discuss "tasks"); (*d*) combinations of these factors limit our HCT's team member's ability to accurately identify prioritized care goals. Independent of the cause of poor goal alignment, it is clear from these data that our HCT did not share a common vision or a shared mental model [2], needed to achieve a high level of team functioning.

Previous studies, published by Pronovost et al and Narasimhan et al, have demonstrated subjective improvement in nurse and physician communication as well as understanding of patient care goals after the implementation of daily goals forms [8,9]. These authors suggested an association between decreased ICU lengths of stay, with the improved understanding of patient care goals. Both of these studies' measured improvements in communications were based upon subjective self reporting through surveys. These surveys documented changes in perceptions by physicians and nurses as related to their comprehension of patient care goals, but not objective data that comprehension or communication actually improved.

We believe our study is the first to objectively quantify whether patient care goal alignment between critical care team members truly improves with the implementation of a daily goals form. We were not able to demonstrate an improvement of objectively measured goal alignment with a readily available (at the entry point to a patient's room) daily goals form. Although previous studies have cited improved perceptions of physician-nurse communication following implementation of daily goals forms, these perceptions may not be entirely accurate. Reader et al demonstrated that "nurses and doctors were found to have differing perceptions of interdisciplinary communication with nurses reporting

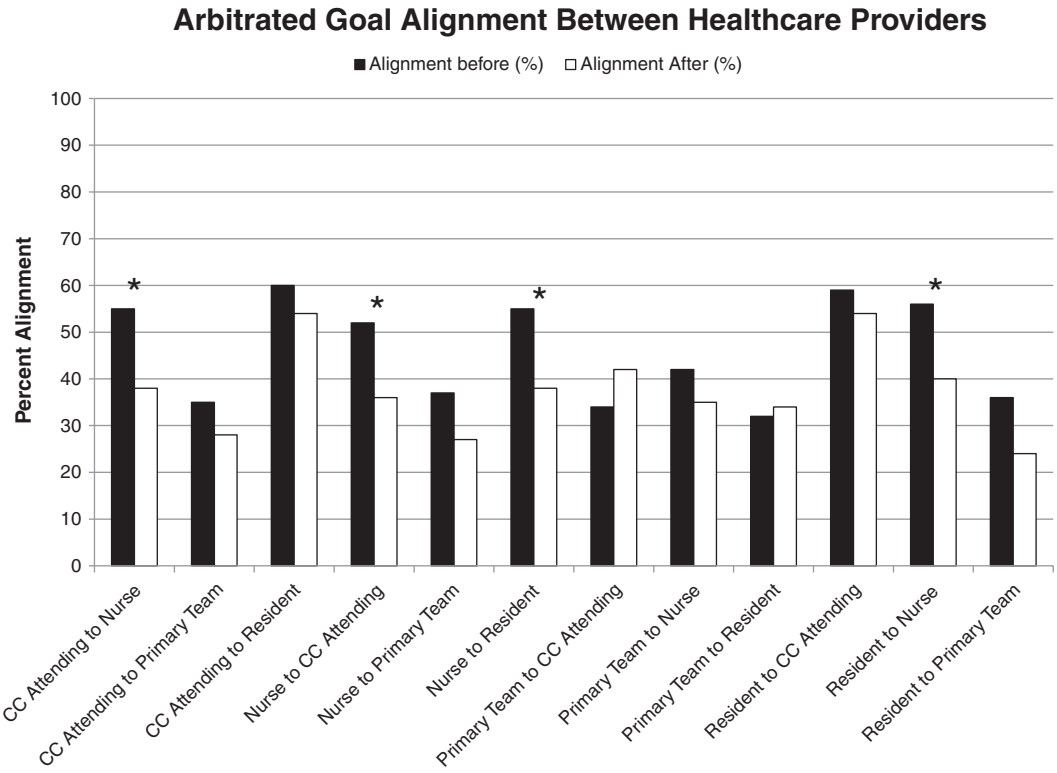

Fig. 3 Arbitrated goal alignments among healthcare providers. *$P < .05$ for goal alignment change before vs. after implementation of a DCC.

lower levels of communication openness between nurses and doctors"[11]. This same study also demonstrated that senior physicians reported higher rates of communication openness than physicians in training. Thus, reports of perceived improvement of care goal understanding may vary among members of the HCT and may not be accurate reflections of true improvement in goal alignment.

As it stands, there is no strict, agreed-upon definition of what a patient care goal is and how one differentiates among a goal, an objective, or a task. There is also no agreed upon method to determine the relative value of different goals for the same patient. The real value in goals communication tools likely rests in the fact that they help the HCT agree upon the tasks involved in a patients care and provide a mechanism for follow-up. Stahl et al demonstrate that 20% of patient care tasks agreed to on rounds are not completed or are forgotten altogether within 24 hours [12]. Rothschild et al demonstrated that "performance level failures were most commonly slips and lapses, rather than rule-based or knowledge based mistakes" [6]. The studies that did demonstrate decreased length of stay had goals communication tools that were established and agreed upon during HCT rounds but also reviewed to ensure that tasks were followed up on several times daily [8,9]. Thus, the real cause of improvement may be attributed to the fact that tasks are established and followed up on rather than that care goals are agreed upon. Furthermore, these studies also relied heavily on the use of checklists which, in light of more recent study results [13], may account for their study findings.

Each member of a care team has a distinct skill set and a distinct way of solving problems based on his or her training and professional culture [13]. The power of the HCT is that patients can derive maximal benefit from multiple areas of expertise. HCT members should share a master plan, but all team members may not have to agree on care goals. Our objective measure of goal alignment demonstrates that alignment is not improved by increasing the visibility daily goals using a daily goals form. Improved alignment of goals across the HCT does not appear to be the mechanism by which improved outcomes occurred in other studies of daily goals forms [8,9]. A possible explanation is that effort expended to discuss these daily goals improves outcomes by enhancing other aspects of the HCT's patient care delivery or interdisciplinary interactions like breaking down communication barriers, increasing frequency of team member interactions, or empowering team members to ask questions about care plans that may not have otherwise been discussed. Checklists have been similarly shown to have these effects on an HCT [14,15].

This process improvement study has several limitations. Its observational design did not control for many cofounders, such as communication outside the DCC about goals or individual provider biases. In addition, no specific education or coaching was provided about how to use these goal cards. For example, we did not discuss the types or categories of goals recorded on the DCCs, largely because we were unaware of a specific ontology for this classification (eg, goals, objectives, tasks). Likewise, we found it difficult to

Table 3 Example of goals

	Goal 1	Goal 2	Goal 3	Goal 4
Before implementation				
Critical Care Attending	Remove bolt **(A)** per neurosurgery then get MRI **(B)** c spine & head	TSA for OR ankle ORIF **(C)**	Feed **(D)** ± extubate **(E)** after OR	
Nurse	Neuro ICP Bolt out **(A)** and MRI **(B)**	GI feeding **(D)** start after OR **(C)**	I/O goal ( ) **(F)**	
ICU Resident	De escalate monitoring **(G)**	MRI **(B)**	D/C bolt **(A)**	SBT to Extubate **(E)**
Primary Team	Extubate **(E)**	Remove ICP monitor **(A)**	MRI **(B)**	
After implementation				
Critical Care Attending	Repeat blood cultures **(A)**	Change ativan to 6 hours **(B)**	Swallow study **(C)**	OOBTC Ambulate with assistance **(D)**
Nurse	C spine stabilization **(E)**	Safety/pulmonary toilet **(F)**	Advance diet (swallow study **(C)**)	Ambulation (circulation) **(D)**
ICU Resident	OOBTC/ambulate with assistance **(D)**	Swallow study**(C)**		
Primary Team	Control of agitation **(B)**	Suture removal **(G)**	Swallow study **(C)**	

In the before implementation case, the overall goal alignment is very good. In the after implementation case, the goal alignment is only average. In both examples, significant events such as operations or blood cultures were not considered "major" goals by different team members. Bold letters identify similar goals shared by different team members. MRI, magnetic Resonance Imaging; c- spine, cervical spine; TSA, time/space available; OR, operating room; ORIF, open reduction and internal fixation; Neuro, neurologic; ICP, intracranial pressure monitor; GI, gastrointestinal; I/O, intake's/output's; D/C, discontinue; SBT, spontaneous breathing trial; OOBTC, out of bed to chair.

define a "major goal." Like many clinicians, we assumed that all HCT members would intuitively know and understand what the most important "things" to accomplish for a given patient on a given day. It was assumed that these "goals" would naturally be understood by the HCT members most intimately involved in a patient's care. Our data does not support this assumption. Table 3 gives examples of the types of goals that our HCT members reported. Interestingly, in both cases, significant events, like going to an operation or obtaining blood cultures were not perceived as major goals" by all healthcare team members and our intervention did not improve these perceptions. It is probable that additional training and education about how to define a "goal" and what to record on a shared communication tool would have improved our goal alignment. For the purposes of this project, we desired to observe and describe real world perceptions. Through these real world examples, we gain additional insights to the professional differences between healthcare providers [16].

Our process improvement project did not include a scheduled review, as Dr Pronovost did [8], of the goals outlined on the door DCC following MDR. Without such a mechanism for sustainability, it is improbable that all team members refreshed familiarity with the planned goals. Lastly, our short study period did not account for possible increases in goal alignment that may have occurred over time with continued use of the door communication card.

In summary, ICU teams strive to improve communication in an effort to reduce errors and optimize patient care. We intuitively expect that increasing goal understanding and availability would be accompanied by increased goal alignment and that this could be a mechanism by which teams improve patient outcomes. Our data show that increasing the visibility of daily goals is not associated with improvement in goal alignment among members of the HCT. Recent research in daily goals forms and checklists in the ICU give hope that these simple tools can help standardize care and facilitate its optimal delivery [13,15]. Our project adds important information about the mechanisms behind how these tools exert their influences. There is a need for ongoing research into these communications tools to better define their mechanism of action.

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