Facilitating Action by Learning Healthcare Systems for Suicide Prevention

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Abstract

The Mental Health Research Network was funded by the National Institute of Mental Health to serve as a national laboratory to improve mental health care. Engaged scholarship between researchers and health systems led to multiple streams of action when we identified sustained elevated risk for suicide attempts in patients who reported suicidal ideation on the Patient Health Questionnaire. We also describe potential solutions to challenges confronted by embedded researchers, including finding common ground between what healthcare systems and funding agencies find compelling, choosing study designs that balance research and clinical tensions, and implementing studies in ways that minimize disruption to the health system. When engaged scholarship is done well, the ultimate reward is the opportunity to both participate in transforming care and measure the impact.

The Institute of Medicine has called for transformation of health systems into learning healthcare systems, whereby patient care and medical research are integrated to allow care practices to be continuously studied and improved.[1] Necessary components include a culture of shared responsibility, universal electronic health records, tools to mine clinical care data, and a clinical research paradigm that includes transforming care based on learnings from those data.[1,2]

Unfortunately, there is an increasing disconnect between the worlds of discovery and of application in medicine, so that what is learned through research is often neither relevant nor implemented, and operational leaders must make decisions based on hunches rather than data.[3] A particularly important component of a learning healthcare system then is an

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emphasis on sharing data and insights between care delivery leaders, clinicians, and researchers through a continuous feedback loop that efficiently improves patient care. These practice-based learnings are an important complement to traditional controlled trials, which, while useful, can be slow, expensive, and difficult to generalize.[4]

One evolving model of a learning mental healthcare system is been facilitated by the Mental Health Research Network (MHRN),[5] funded by the National Institute of Mental Health. MHRN was founded in 2010 and includes researchers embedded in 13 health systems serving nearly 13 million patients across 15 states. MHRN was envisioned to be a national laboratory to study and improve mental health care, taking advantage of defined populations and electronic medical record (EMR) data systems. MHRN strives to foster engaged scholarship between those who conduct and those who use research. This is fostered by an MHRN workgroup that tracks and shares engagement lessons among the 13 members.

MHRN's collaboration with health systems to understand and reduce suicide risk is one example of engaged scholarship within the network. Previous research on care management and collaborative care for depression demonstrated the importance of measuring depression symptoms in improving outcomes,[6] and as a result, many MHRN healthcare systems began using the PHQ9[7] to screen for and monitor depression. This increased use created both a concern and an opportunity: clinicians were concerned about what might be appropriate risk assessment and follow-up for patients reporting thoughts of death or self-harm; MHRN researchers were able to use the data recorded by clinicians to systematically address that concern.

Early findings indicated that 6% of patients who completed a PHQ9 reported on item 9 that they had thoughts that they would be better off dead or of hurting themselves more than half the days (a score of 2) or nearly every day (a score of 3) in the previous two weeks. However, little evidence was available to determine whether these results actually predicted suicidal behavior, so researchers carefully reviewed the data generated by the four MHRN healthcare systems that were administering PHQ9s most consistently. In a sample of over 1.2 million PHQ9 scores completed by over 500,000 outpatients, those who scored a 2 or 3 on item 9 of the PHQ9 were at significantly increased risk for a subsequent suicide attempt.[8] The positive predictive value of a score of 2 or 3 on item 9 of the PHQ9 for suicide attempts was 4%, while the sensitivity was 50%. Surprisingly, this elevated risk of suicide attempt persisted over two years. Involved healthcare systems had protocols in place to monitor and address a patient's immediate risk of suicide, but did not have empirically based protocols to systematically address patients' immediate or sustained suicide risk.

Identification of this sustained risk of suicide attempts led to four streams of action in MHRN healthcare systems:

1)   **Practice Change.** Due to the evidence of increased risk of suicide attempts in those who reported suicidal ideation on the PHQ9, health systems and governing organizations felt compelled to act rather than conduct an experiment to address this risk. Within MHRN, some healthcare systems implemented more thorough assessments of suicide risk as well, most often using the Columbia Suicide Risk Assessment,[9] for patients reporting any level

of suicidal ideation. At Group Health, a risk-specific follow-up protocol was implemented, dependent on the results of the Columbia questionnaire, which included safety planning and more frequent follow-up, with feedback given to clinicians and clinics regarding their adherence to the protocol. This protocol was developed for behavioral health clinics and has since been spread to urgent and primary care clinics. At Kaiser Permanente Colorado, the behavioral health department used these new findings to accelerate work they had initiated as a quality improvement project to increase use of the Columbia risk assessment. The research team facilitated the implementation of the Columbia tool into the EMR, lessening the burden on clinicians and support staff to transfer the results from a paper format to the EMR. Similarly, Henry Ford has used these data to inform implementation of its expanded outpatient depression and suicide screening protocol. Based in part on these MHRN findings, the Joint Commission recently issued a Sentinel Event Alert recommending that all patients be screened for suicidal ideation using a brief, standardized, evidence-based screening tool,[10] which will likely lead to more broad adoption of these tools throughout the country. In these examples, new research learnings led quickly and efficiently to practice changes.

2) **Effectiveness Research**. Researchers and healthcare system leaders found little evidence for effective interventions to address the enduring vulnerability for suicide beyond the short-term crisis. Researchers at three MHRN healthcare systems – Group Health, HealthPartners, and Kaiser Permanente Colorado – obtained funding from NIH to conduct a large pragmatic trial of between-visit outreach programs to prevent suicide attempts. The effectiveness of an online dialectical behavior therapy skills training program, supported by an online health coach, is being compared to a risk assessment and care management intervention and to usual care. All patients who score a 2 or 3 on item 9 of the PHQ9 are automatically enrolled and randomized. Patients randomized to intervention groups are then invited to participate via secure emailed invitations sent via the EMR, and suicide attempts are assessed for all who are randomized. In designing this study, researchers were mindful that systems were unlikely to adopt a program if it was too costly or cumbersome. As part of this study, researchers are also examining the performance of the Columbia Suicide Risk Assessment, as the usefulness of this tool in the context of routine clinical care is largely unknown. Before implementation, researchers worked with local healthcare leaders to design the study in a way that would cause minimal disruption in clinical workflows. Fitting the intervention into existing workflows and making the intervention as efficient as possible helps ensure that these healthcare systems – and others – will be able to implement these strategies if found to be effective.

3) **Exploratory Research.** Healthcare system data revealed that among people who attempted suicide within 30 days of completing the PHQ9, 25% had denied experiencing thoughts of self-harm on the PHQ9. Healthcare leaders and researchers recognized a need to explore the low sensitivity (50%) of the

PHQ9 and better understand these unexpected suicide attempts. Subsequently, researchers at Group Health obtained funding from the American Foundation for Suicide Prevention to interview people who survived suicide attempts after denying suicidal ideation on the PHQ9. Additionally, MHRN researchers obtained funding from NIMH to identify risk signals of suicide in people with no recorded mental health need in 8 MHRN organizations, including a sample of over 4,000 individuals who died by suicide, the largest study of its kind among US general population healthcare users.

4) **Continuous Learning in a National Laboratory.** In addition to ongoing suicide prevention studies implemented across MHRN, endless opportunities for partnership and improvement remain. MHRN's Suicide Prevention Scientific Interest Group provides a forum for discussing these opportunities, and participants include embedded researchers at all MHRN sites as well as many externally-affiliated researchers and project officers from NIMH and SAMHSA. These partnerships support this interest group as a national laboratory for future suicide prevention research and quality improvement.

While partnering with clinicians and administrators in these health systems is worthwhile, there can be challenges to creating these relationships in the first place. Many researchers work in environments that are several steps removed from clinical care, leaving them unlikely to have significant relationships with care system leaders or some idea about how to create them. Building such partnerships takes time and trust, and researchers most often need to take the initiative to reach out to their clinical partners. MHRN researchers have had success with serving on committees or workgroups where care priorities are discussed and set. In this way, we develop those needed relationships, as well as a deeper understanding of the pressures and knowledge gaps that care delivery teams face. In addition to giving researchers a chance to listen to their care delivery partners, it also gives them an opportunity to educate healthcare leaders about the potential value of a learning healthcare system.

Once the relationships between researchers and healthcare system leaders are established, multiple challenges remain. Clinical resources are limited so that care systems may be reluctant or unable to take on more responsibilities or significantly change workflows, and leaders may be reluctant to hire staff for temporary jobs that end when the grant ends. Instead, research is most likely to move forward when it is implemented in ways that are minimally disruptive to workflows and maximally feasible to sustain. This is easier for embedded researchers to navigate when they also maintain a part-time clinical practice and have firsthand knowledge of these workflows and pressures, but care leaders have also been willing to walk researchers through clinic workflows to promote this knowledge. Ultimately, this vetting process ensures that studies that are implemented and found to be effective are much more likely to continue and be spread after the research ends.

Another challenge is potential for conflict between researchers feeling compelled to randomize to obtain scientific evidence and healthcare leaders preferring to provide additional resources and possibly improved care for every patient. We often find that other

research designs – including observational studies, pre/post designs, stepped wedge designs, and others – may be both scientifically strong and more compatible with care system needs.

An additional challenge is lack of alignment between the research and delivery system agendas. This is best overcome when all work to find common ground between what care partners and funding agencies find compelling, something that is becoming easier as funders face greater pressure to fund work that directly improves care. A further challenge can be the dissonance that can exist between clinical questions that need answers now and the comparatively slow pace of research funding and findings. Although the pace of funding is still slow, and we still publish findings in medical journals, embedded researchers are able to increase the rate of dissemination by sharing findings promptly and directly with their health system partners. A final challenge is a lack of funding from grants or care systems to cover researcher time to engage in implementation of what has been learned. While we haven't yet found a satisfactory solution for this barrier, we are hopeful that this will change as funders face greater pressure to facilitate healthcare change.

Ultimately, the greatest benefit to working collaboratively with care system partners is the opportunity to improve care more efficiently and effectively than is otherwise possible, ideally by transforming care while simultaneously measuring the impact of this change. Our system partners highly value the role of research as it pertains to being a learning healthcare organization, but this relationship has taken careful nurturing over years. Care system leaders who are under pressure to improve results for areas measured by National Committee for Quality Assurance, the Joint Commission, the Physician Quality Reporting System initiative, and others, influence the selection process for projects in a manner that better aligns our work with key national priorities. When we study such issues, we are assured that our findings will be more likely to have a meaningful impact on the lives of our patients, the ultimate goal of our work.

Acknowledgments

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