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Quality Improvement and Safety in Healthcare: Reflections on essential frameworks to guide applied scholarship that promotes transformation and innovation

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> *"The randomized controlled trial is the gold standard of clinical research, but may not be appropriate or feasible for quality improvement studies. The science of quality improvement needs to develop so that agreed upon study designs and methods are applied in a more uniform fashion." (Dougherty and Conway, 2008, p. 2320).*

The publication of the inaugural issue of the *Journal of Nursing and Interprofessional Leadership in Quality and Safety* (JONILQS) is the culmination of visionary leadership, scholarly effort, and attention to the details necessary to launch a journal. The visionary leadership comes from Dean Lorraine Frazier of the University of Texas Health Science Center at Houston's School of Nursing, who has challenged us to see the connections possible across the disciplines and health systems of the Texas Medical Center and extend these experiences beyond traditional academic and organizational boundaries. The scholarly effort comes from the contributing authors who invested in writing for a "new" journal whose core consists of applied, practical work that will change things for the better for the patients we serve. And, finally, the keen attention comes from the Co Editors-in-Chief, Dr. Joanne V. Hickey and Dr. Eileen R. Giardino, assisted by librarian Laurel Sanders of The TMC Library who have established the journal's editorial policies and operationalized the infrastructure necessary to receive submissions, coordinate a peer-review process and edit informative, and engaging articles. The release of the first issue is indeed a great accomplishment and provides an opportunity to reflect on what the journal wants to accomplish in the coming years.

The launch of this journal occurs during a period of ongoing transformation as health care reform efforts position quality and safety as foundational elements. Along with increasing access to care, enhancing the patient experience, and bending the cost curve, professionals, advocates, and the lay public increasingly view the improvement of quality and ensuring safety to be among the "must haves" for the success of health care reform.

Berwick's 3 Eras of Health Care

"Four decades into the quality movement, few in health care have studied the work of Deming, can recognize a process control chart, or have mastered the power of tests ("plan-do-study-act" cycles) as tools for substantial improvement . . . Academicians should make mastery of improvement sciences part of the core curriculum for the preparation of clinicians and managers." (Berwick, 2016, p. 1330)

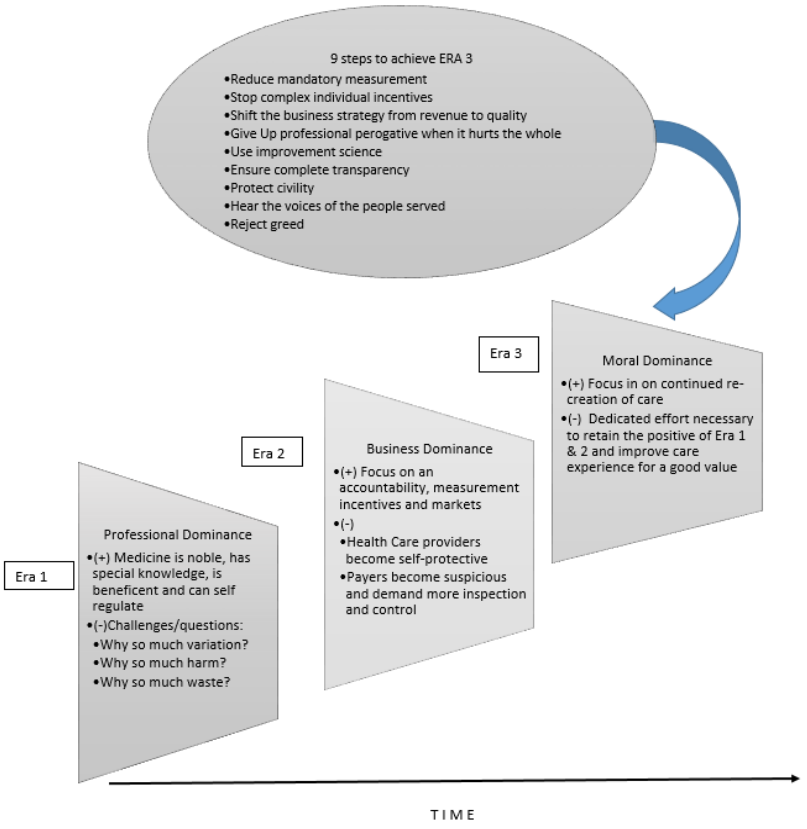
Dr. Donald Berwick is a visionary leader of the international healthcare quality and safety movement who supports meaningful measurement, effective transformation, and action-oriented quality and safety strategies that span the local to the global. He described 3 "eras" of health care relevant to the launch of the JONILQS. Health care has traversed through 2 eras and he challenges us to move into the third era (Berwick, 2016). The first era is defined by professionalization of the various disciplines involved in delivering health care and is characterized by professional trust and protection of the scope and roles for these disciplines. Era 2 is defined by "accountability, scrutiny, measurement, incentives and markets" (Berwick, 2016, p. 1329) and is characterized by business principles, incentives, punishments, and pay for participation and performance. Era 2 is a hard-knuckled approach to demanding better performance for the health care dollar and an effort to deliver safe and effective care to patients. Berwick's has a penchant for effective change management that aspires to achieve dramatic improvement results and wants us to pursue the third era (T3) characterized by a nine step change process which he calls the moral era (Figure 1).

Germane to the launch of this journal, two of the nine steps that will get us to Era 3 are a shift in the business strategy for health care from a focus on revenue and productivity to a focus on quality

and safety, and, the use of improvement science throughout health care. Berwick (2016) is clear that the need for more attention to quality improvement and patient safety as essential to reaching Era 3. "Maximizing revenue continues too much to dominate the business models of health care organizations. That reflects short-term thinking. A better, more sustainable route to financial success is improving quality. This requires mastering the theory and methods of improvement as a core competence for health care leaders" (Berwick, 2016, p. 1329).

The movement toward Era 3 requires an organized, dedicated effort, and proponents of Era 1 may find Era 3's patient focus limiting, while those enthusiastic for Era 2's business approach may find Era 3's idealism naïve (Berwick, 2016). However, clinicians, communities, and patients will benefit when Era 3's nine steps toward continual improvement efforts take root in our health care system.

Figure 1: 3 Eras of Health Care:



Adapted from Berwick D. M. (2016). Era 3 for Medicine and Health Care. *Journal of the American Medical Association,* 315(13):1329-30. doi: 10.1001/jama.2016.1509.

Dougherty's and Conway's 3 T's Road Map to Transform Healthcare

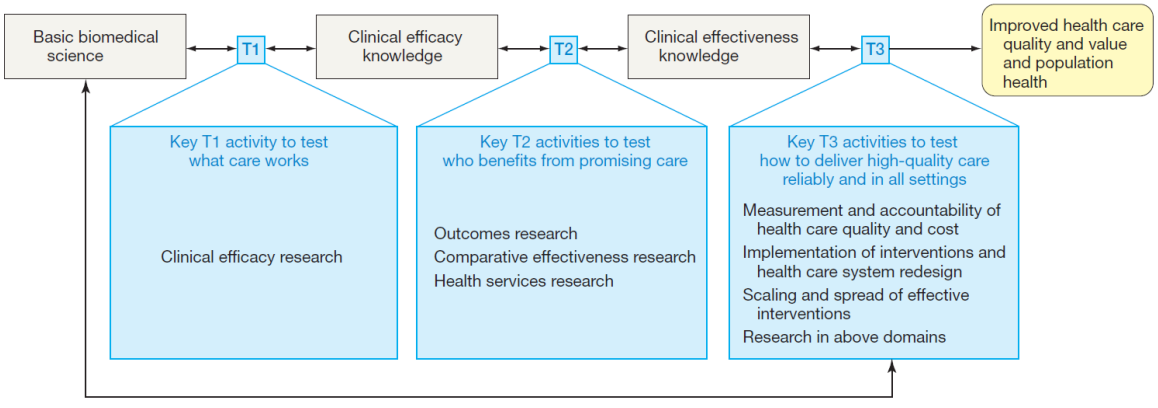
"…the United States will continue to fail to fully leverage new clinical discoveries into improved health care outcomes unless there is an accelerated transformation of the health care system" (Dougherty and Conway, 2008, p. 2319).

Clinicians and educators recognize the scholarly value of quality improvement and safety enhancement initiatives as highlighted with the increasing focus on translation science and the translation research paradigm which we have come to see as a continuum of scholarly work defined by a series of translations (Ts) (Figure 2). According to Dougherty and Conway (2008), the scholarly journey begins with the first translation, T1, which occurs when findings from basic science are translated into clinical research, and the second translation, T2, occurs when clinical research is translated into practice guidelines, pathways, and protocols that seek to define the appropriate care that ought to be delivered. Finally, the third translation, T3, is the applied work, often called "the how of health care delivery," which focuses on the implementation and evaluation of local, contextualized best practices drawn from evidence-based, or at least evidence-informed, practice standards.

T3 is very much an "applied science" and defines the quality improvement and safety work that JONILQS will address. T3 work concerns itself with the part of the scholarly journey that describes the processes necessary to actually deliver ideal care in a real-world setting, the granular information about what works best in a specific context, and the detailed operational information about how change happens, is sustained, and how it spreads across one's organization or throughout the population. W T3 is applied in a systematic, organized, and transparent manner is quality improvement work at its best that is truly transformational when shared. The call by Dougherty and Conway (2008) call for shared leadership, teamwork, tools, and resources to be the transformation facilitators on the translation road map.

Figure 2: The 3T's Road map

Figure. The 3T's Road Map



T indicates translation. T1, T2, and T3 represent the 3 major translational steps in the proposed framework to transform the health care system. The activities in each translational step test the discoveries of prior research activities in progressively broader settings to advance discoveries originating in basic science research through clinical research and eventually to widespread implementation through transformation of health care delivery. Double-headed arrows represent the essential need for feedback loops between and across the parts of the transformation framework.

Dougherty, D., & Conway, P. H. (2008). The "3T's" road map to transform US health care. *JAMA, 299*, 2319-2321, p 2320. Used with permission.

The Boyer and Glassick View of Scholarship

> "…the time has come to move beyond the tired old 'teaching versus research' debate and give the familiar and honorable term "scholarship" a broader, more capacious

> meaning, one that brings legitimacy to the full scope of academic work. Surely, scholarship means engaging in original research. But the work of the scholar also means stepping back from one's investigation, looking for connections, building bridges between theory and practice, and communicating one's knowledge effectively to students" (Boyer, 1997, p. 16).

Boyer (1997; 2016) describes four overlapping, interrelated, but separate and distinct functions to scholarly work as discovery, integration, application, and teaching. They are described as follows:

- Scholarship of discovery
  - Investigation of the unknown, advancement of knowledge and understanding, "comes closest to what is meant when academics speak of 'research." (p. 17)
- Scholarship of integration
  - Synthesizing, interpreting, connecting, "fitting one's own research—or the research of others—into larger intellectual patterns" (p. 19).
- Scholarship of application
  - Dynamic engagement with discovered and synthesized knowledge, use of knowledge to ameliorate or solve problems, "… as the scholar asks, "How can knowledge be responsibly applied to consequential problems? How can it be helpful to individuals as well as institutions?"
- Scholarship of teaching
  - Education, pedagogy, "…a dynamic endeavor involving all the analogies, metaphors, and images that build bridges between the teacher's understanding and the student's learning."

The scholarship of application is most related to what is typically seen in health care as local, contextualized work in the quality improvement tradition. First, the scholarship of application is fundamentally related to service to one's community, organization, or in health care, one's patients. In Boyer's (1997) words; "To be considered scholarship, service activities must be tied directly to one's special field of knowledge and relate to, and flow directly out of, this professional activity. Such service is serious, demanding work, requiring rigor—and the accountability—traditionally associated with research activities" (p. 22). Scholars of application in health care use emerging evidence and established best practice to find ways to foster change toward higher levels of performance and practice to improve care processes and ultimately patient outcomes. Boyer (1997) describes the two-way street on which the scholarship of application unfolds and zeroes in on the back-and-forth or dynamic nature to this form of scholarship.

> Indeed, the term itself may be misleading if it suggests that knowledge is first 'discovered' and then 'applied' … New intellectual understandings can arise out of the very act of application--whether in medical diagnosis, serving clients in psychotherapy… In activities such as these, theory and practice vitally interact, and one renews the other" (Boyer, 1997, p. 23).

The scholarship of application is aligned with Berwick's call for the use of measurement science as a foundational building block and the requirement to add the scholarship of application to core curricula. In addition, the connection of the scholarship of application to Dougherty and Conway's (2008) T3 activity in health care transformation is clear, especially when done with the rigor required of such high caliber and impactful work.

Glassick (2000) proposes that six standards be used to determine solid performance, and these are derived from information collected in response to Boyer's (1997; 2016) scholarship proposal for

defining the four types of scholarship. Emanating from an analysis of definitions of excellence drawn from granting agencies, scholarly press directors, and journal editors, the six standards are:

- Clear goals:
  - state the basic purpose clearly
  - define objectives in a realistic and achievable manner
  - identify important questions
- Adequate preparation:
  - Show an understanding of existing scholarship
  - Demonstrate necessary skills
  - Brings together necessary resources to conduct/complete project
- Appropriate methods:
  - Methods selected are appropriate to stated goals
  - Methods applied effectively
  - Appropriate modification in response to circumstances/context
- Significant results:
  - Goals achieved
  - Work additive and valuable to the field
  - New areas opened up by work's findings
- Effective presentation
  - Work shared in suitable and informative manner
  - Appropriate communication for intended audiences
- Reflective critique:
  - Limitations of current work identified
  - Appropriate evidence, both pro and con used to formulate critique or limitations
  - Evaluation of current work used to inform and shape future work.

JoNILQS will publish quality initiatives and reports from the field that are the scholarship of application. This is fitting since quality improvement work is fundamentally an applied science where best practice is molded and shaped to solve problems in the clinical setting. The other forms of scholarship are of great value to the applied scholar as the innovation and insights discovered during the scholarship of investigation and the teaching methods discovered in the scholarship of education all have a place in the hard work to change practice that is a foundational element of the scholarship of investigation.

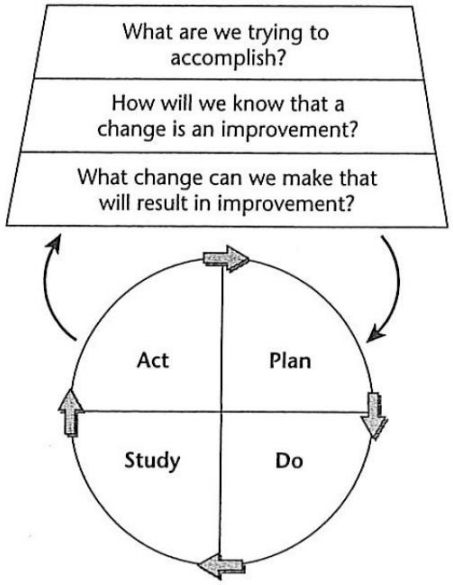
Langley and Colleagues' Model for Change

"Throughout history, people have used trial and error as an approach to improvement. This approach is often defined as making a change and then seeing if anyone complains, or if something stops working because of the change. The trial-and-error approach, which can be carried out with various degrees of sophistication, has sometimes been criticized as jumping to solutions without sufficient study both before and after the trial. In response to this criticism, some people have turned to extensive study of the problem before a change or trial is attempted. This approach can lead to paralysis. Focusing on the key principles of change and improvement should allow us to take advantage of the better of these two approaches" (Langley, Nolan, Nolan, Norman, & Provost, 1996, p. 3).

The elegance of Langley and colleagues' 2 component model for change is in its straightforward simplicity. The first component consists of a set of 3 questions, which are highlighted at the top of Figure 3 (Langley et al., 1996). These questions are related to the aim, measurement, and feedback mechanism for the intended improvement effort. The second component consists of the now-classic

Plan-Do-Study-Act (PDSA) cycle, drawn as a labeled circle in Figure 3. The three questions form the element of the model that homes in on the *why* of the change or quality improvement effort, whereas the PDSA cycle zeroes in on the *what* and the *how* of the trial and learning element of the model. Langley and colleagues are clear that the PDSA cycle is often misapplied with the mistaken sense that the cycle is the implementation of the change when in fact it is the step prior to implementation. Instead, the PDSA cycle is the trial of the proposed change and then the turn of the cycle provides the learning that informs any modifications necessary. If all is measured and a determination is made that the change resulted in improvement, then the team would move towards an implementation plan (Langley et al. 1996).

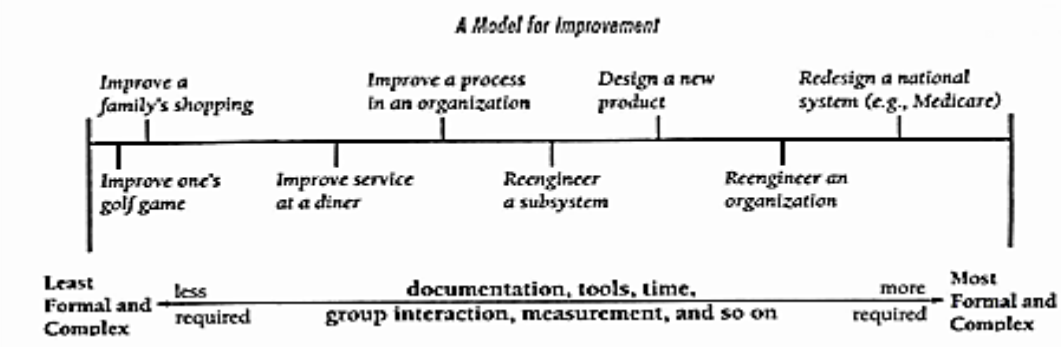
Figure 3: The Model for Improvement



From: Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance*. 2nd edition. San Francisco, CA: Jossey-Bass. p. 24. Used with permission.

How formal the design of a quality improvement effort should be, and how precise the measurements should be to gauge success or failure of a change made to improve outcomes is described as a continuum (see Figure 4). When moving from the relatively trivial (e.g., one's golf game) to the very serious (e.g., redesigning the Medicare program), the level of formality and precision progressively increases along this continuum from less formal/precise for the minor to more formal/precise for the major or significant changes. While the processes underpinning the change effort can slide from one side of the formality and precision continuum to the other, the measurements must always be accurate and relevant and the quality improvement initiatives should consistently be done with a solid level of rigor. This reliance on accuracy and rigor ties back to the assessment of the scholarship of application (Glassick, 2000).

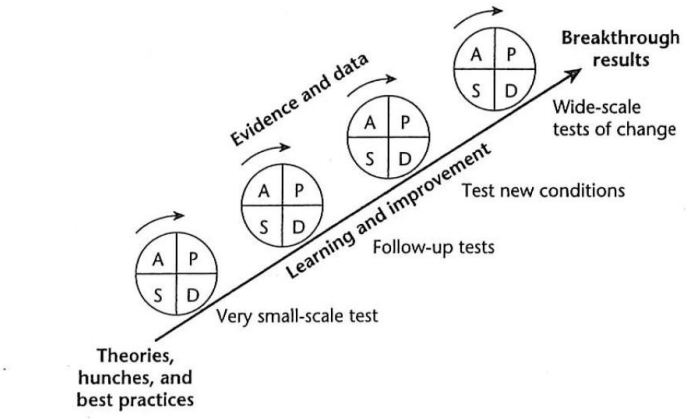
Figure 4: Scale of Formality of Approach for Improvement Efforts



From: Langley, G. J., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (1996). *The improvement guide: A practical approach to enhancing organizational performance*. San Francisco, CA: Jossey-Bass. p.11. Used with permission.

Finally, in doing actual quality improvement work in health care, one turn of the PDSA cycle is rarely enough to trial and learn to the extent that the 3 framing questions require. Figure 5 captures the interactive nature of small tests of change that typically define the progression of a quality improvement initiative, and these interactive turns of the PDSA cycle typically are seem as rolling up an incline towards the more desirable results since the trial and learning enhances each turn of the cycle. But like rolling a ball up a hill, a significant amount of time and effort are required.

Figure 5: Sequential Building of Knowledge with Multiple PDSA Test Cycles



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"… [A] view of scholarly service—one that both applies and contributes to human knowledge—is particularly needed in a world in which huge, almost intractable problems call for the skills and insights only the academy can provide. As Oscar Handlin observed, our troubled planet 'can no longer afford the luxury of pursuits confined to an ivory tower . . . [S]cholarship has to prove its worth not on its own terms but by service to the nation and the world'" (Boyer, 1997, p. 23).

The Journal of Nursing and Interprofessional Leadership in Quality and Safety releases its first issue with a focus on highlighting scholarship that guides interdisciplinary and interprofessional quality improvement and patient safety initiatives as well as translational work at or near the bed side. JoNILQS embraces Berwick's principles of quality improvement to describe small-scale quality

improvement and safety initiatives that serve as potential models for larger-scale application in other settings. The journal embraces Berwick's Era 3 vision as an focus for the future and believes that improvement science is an essential competency for future nursing and interprofessional leaders of local and national health care endeavors.

The initiatives published in JoNILQS will facilitate movement from the profession-centric and business oriented first and second eras to the more patient and improvement focus of the third, moral, era which is, the right care for the right patient at the right time (and at the right cost). Each initiative has promoted change and utilized theory and methods fundamental to changing clinical practice in a rigorous, systematic manner that used measurement and change management principles.

This inaugural issue of JONILQS is released with a great sense of responsibility to uphold rigorous scholarly standards that provide its readers with descriptions and evaluations that are informative and applicable in one's own setting. JONILQS's greatest compliment will be to receive feedback that its publications are useful and relevant to the providers and leaders in our heath care institutions who strive to make systems and processes better for the patients and professionals they serve.

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