Prototype 0.8 Solutions to Quality Problems

The mission of the School of Community medicine is to prepare faculty and graduates for health profession careers that lead the improvement of health for individuals and communities. Of particular interest is the health of the Tulsa and Oklahoma communities, which have both suffered devastating reversals in the quality of health and health care over the past 20 years.

At the center of the health improvement strategy is the SOCM’s curriculum in quality improvement. This curriculum links the educational processes of the SOCM with the healthcare outcomes for the people in the Tulsa and Oklahoma communities. What we mean by curriculum is the formal supervised program of service learning and action research that changes the knowledge, skill, attitude, and behavior of the school’s faculty, students, residents, and graduates to develop competence in quality improvement of healthcare.¹

Hundert and Epstein have defined competence in medicine as “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individuals and communities being served.”² Quality improvement in healthcare thus depends directly on healthcare professionals’ competence in applying the principles and methods of system-based evaluation and making changes to improve healthcare outcomes.³

The Summer Institute introduces faculty and students to the theory and practice of quality improvement through action research. This is the iterative process involving researchers and practitioners acting together on a particular cycle of activities, including problem diagnosis, action intervention, and reflective learning.⁴ The OU-Tulsa Center for Health Outcomes and Improvement Research (CHOIR) is the organizational embodiment of this curriculum. The Family Medicine residency program has incorporated these principles in its action research projects for improving patient care, the PCP program.

Our particular form of action research is quality improvement in healthcare outcomes and the systems that produce them. The Institute for Healthcare Improvement (IHI) identified seven domains for quality improvement action: ⁵

- **Customer knowledge** – we will gain this through the community stakeholder dialogue interviews and the patient shadowing at the Bedlam clinics;
- **Measurement** of processes and outcomes of care – we will learn from our Public Health colleagues the measures of health and the health care system in Oklahoma and will use innovative measurement methods to work on the prototype solutions we pick;
- **Making change** – we will learn who can make changes and how change can be made in our prototype 0.8 work groups. We will apply the principles of continuous quality improvement learning and applying the principles of rapid-cycle tests of change as described by Nolan. (8)
• **Developing new, locally useful knowledge** – this is the heart of action research learned from the interviews, world café conversations, and the presentation of the prototype 0.8 projects;

• **Understanding that healthcare is the product of a system of interdependent processes** – the underlying theme of the lectures, interviews, conversations, shadowing vulnerable patients, and prototype 0.8 work groups will be the understanding of the processes and systems that deliver health care;

• **Collaboration** – the professional meaning conversations, the Bedlam clinic shadowing, and the structure of interdisciplinary interview and work groups help us learn the essential attitude of collaboration in medical professionalism.

• Understanding that health care always occurs in a **social context and that all health professionals are always accountable** for their competencies in producing the care from the systems. This is the crux of community medicine.

### Competence in Practice-Based Learning and Improvement

One of the six competencies the Accreditation Council for Graduate Medical Education requires accredited programs to teach resident physicians is **Practice-based Learning and Improvement**. This competency combines adult learning theory and quality improvement theory with change management theory to continuous professional development and to health systems changes.

The figure in the appendix shows a model of this competence and its many interrelated parts. The model may be useful for learners who wish to dive deeply into the interrelationship of individual and system learning, formal education, health care system influence, and research in their impact of health professional and system learning. The core learning process is the central cycle of Measure > Assess Knowledge > Design Change > Execute Improvement.

### Prototype 0.8 – Change Ideas

During the Summer Institute, we will divide into small groups to work on change ideas that we call **Prototype 0.8**. This is the name for a model of an idea that would change an aspect of healthcare aimed at improving the health status or healthcare for Oklahomans. The change idea could be a change in professional education, a change in part of the healthcare delivery system, or a change in policy about health care delivery. The idea for the change may come from any of the experiences in the Summer Institute. Ideas may come from your experience in the community stakeholder dialogue interviews and world café conversations, the lectures, or from the professional meaning conversations.

We use the term “Prototype 0.8” to indicate that the model of the solution demonstrated is neither final nor finished. It is only sufficiently detailed and functional to enable reviewers to provide feedback on the idea. In developing prototype 0.8 model solutions, we use quality improvement theory. This is a set of principles that involve knowledge,
skills and methods to evaluate processes and outcomes of health care and to make changes in the system of processes that might improve the outcomes of the process. vi

The Process for Creating a Prototype 0.8 Change Idea (Brainstorming)

First, we will come together as a large group to brainstorm potential answers to the central question about the future health of Oklahomans and the role of the School of Community Medicine. Second, we will narrow the list to those that small groups would like to work on during about 5 hours of the Summer Institute to develop a prototype solution. Third the small group will go off and shape the problem they are trying to solve and develop a prototype solution for testing. The final step in this exercise is the group presenting their prototype 0.8 solution to the Summer Institute participants and some community stakeholders on the last morning.

Question or Problem to be Solved

What can we (students and faculty in the OU, Tulsa School of Community Medicine) do to improve the quality of health and healthcare for Oklahomans?

Brainstorming Ideas to Answer the Question vii

Brainstorming is a group creativity technique designed to generate a large number of ideas for the solution to a problem. It is a group process designed to capture as many ideas as possible, particularly new ideas and associations that may not have been considered before.

There are two types of social inhibitions to brainstorming. Production blocking is a tendency for one individual to block or inhibit others during a group discussion. By talking excessively about his or her idea, one person “blocks” others who are less able to provide their own creative input. They may not have time to think of an idea, or they may be distracted or forget about their idea before they have an opportunity to share it. Another inhibitor is social loafing described as people feeling unmotivated when working in a group, because they think that their contributions will not be valued, or they are unappreciated.

There are four basic rules in brainstorming that reduce the social inhibitions and therefore stimulate the generation of new ideas. The expected result is a dynamic synergy that will dramatically increase the creativity of the group.

1. **Focus on quantity**: This rule is a means of enhancing divergent production, aiming to facilitate problem solving through the maxim, *quantity breeds quality*. The assumption is that the greater the number of ideas generated, the greater the chance of producing a radical and effective solution.

2. **No criticism**: It is often emphasized that in group brainstorming, criticism should be put 'on hold'. Instead of immediately stating what might be wrong with an idea, the participants focus on extending or adding to it, reserving criticism for a later
'critical stage' of the process. By suspending judgment, one creates a supportive atmosphere where participants feel free to generate unusual ideas.

3. **Unusual ideas are welcome**: To get a good and long list of ideas, unusual ideas are welcomed. They may open new ways of thinking and provide better solutions than regular ideas. They can be generated by looking from another perspective or setting aside assumptions.

4. **Combine and improve ideas**: Good ideas can be combined to form a single very good idea, as suggested by the slogan "1+1=3". This approach is assumed to lead to better and more complete ideas than merely generating new ideas alone. It is believed to stimulate the building of ideas by a process of association.

**Forming Prototype Work Groups**

After a sufficiently long list of potential solutions to the question have been generated, the leader of the brainstorming will ask the group to determine if some of the ideas might be linked to form a bigger or better idea. After this association process has winnowed the idealist somewhat, participants narrow it further by voting on the three ideas they would be interested in working on. Those ideas receiving no votes are dropped from the list. Each participant then chooses one of the remaining ideas. If three or more persons have selected the idea, they will form a work group. If fewer than three have selected an idea to prototype, they will be invited to join another group.

**Developing Prototype 0.8 Solutions**

The work groups will be assigned a workroom. Each participant will have access to a computer connected to the internet. John Studebaker and Shawn Schaefer will provide resources for mapping the city of Tulsa with demographic and health care data that may be used by any groups. The group will select a leader and assign roles that are needed to develop the prototype and its demonstration or presentation to the large group.

The imagination, talent, and resources available to the persons in the group will define what may be done. It is likely that the group will need to research some background data or other information to define the problem and develop its prototype. The goal of the work process is to have a clear definition of the particular problem that is being solved or the process that is being improved. Next, it will develop a plan or prototype that has a high probability of solving the problem or making an improvement. Lastly, it will design a process for presenting the solution to the group. All members in the group should be active participants in the solution.

The purpose of this exercise is to practice small group or committee process in tackling a manageable problem. Participants should crystallize their vision for improvement through the group conversation about the problem, and shape a potentially successful solution. It is anticipated that from these work groups ideas will come quality improvement or action research projects that will be conducted over the coming months.
Presenting the Prototype 0.8 Solution

On Friday morning, each group will have 10 minutes to present their solution to the problem they have shaped. The assembled Summer Institute participants and some community stakeholders will be invited to give feedback on the vision, practicality, and imagination of the prototype. It is anticipated that the energy unleashed from this creativity will generate substantial motivation to proceed with the testing and potential implementation of the prototypes in the activities of the School of Community medicine.

At a minimum, the participants will have learned interdisciplinary group problem solving and the application of some of the principles of action research applied to quality improvement in health care. The maximum outcome from this exercise is beyond imagination. We hope that the agenda for medical education, patient care, and community-based participatory research from the OU Tulsa School of Community Medicine will receive a jump-start from this exercise.

Role of Faculty and Students

Both faculty and students are equal participants in these work groups. Some participants may have more information or resources to bring to the prototype development than others may. Everyone will learn from each other. Faculty participating in this exercise will have had a brief training experience in how to assure that the work group progresses will and that everyone has a chance to contribute. The faculty members are not designated leaders of the groups. In fact, these are generally leaderless groups that self-organize and roles and tasks are taken on by volunteering according to interest, resources, or expertise.
The Accreditation Council for Graduate Medical Education (ACGME), the American Board of Medical Specialties (ABMS), the Joint Commission, the Association of American Medical Colleges, and the Accreditation Council for Continuing Medical Education have all adopted the six competencies framework for organizing educational curricula and for evaluation competence of physicians. This model is useful for all health professionals. The framework contains a new competence in Practice-Based Learning and Improvement, which has been one of the most difficult for faculty to understand. This model was developed by F. Daniel Duffy for the American Board of Internal Medicine to describe the interrelated elements of this competence. It may be a useful way to organize our understanding of how practice-based learning (or systems-based learning) might occur in the School of Community Medicine.

The model begins in the center with the doctor and the patient – here is the physician-patient relationship and it is in this relationship where the competence in Patient Care, Communications and Interpersonal skills and the patient-related competencies in professional exist.
Learning Cycle (Change or Improvement Cycle)

The blue cycle is the Learning Cycle or the quality improvement cycle. Since it is a cycle it can begin anywhere, so we begin with the **Measure** of the practice (the blue box to the left). This is a measure of the quality of a process or outcome of care. In individual professional development it could be a self-assessment of learning needs coming from a self-administered test or from a surprise in an outcome of care.

The next step in the cycle is to **acquire, assess new knowledge, and set goals to apply the new knowledge** to practice processes or personal habits. In this cycle, we are showing that the measurement of performance in practice, which could have been done by obtaining quality reports from a health plan or reviewing measures reported from an internal registry, or by completing a part of maintenance of certification process, produces new local knowledge. We use this new knowledge about our practice (or performance on a test) to set goals for improvement.

The third step in the cycle is to **design processes or habits** to apply the new knowledge. In this step we engage in repeated rapid-cycle tests of change (Plan>Do>Study>Act) to determine which design idea really works. In the Summer Institute, we refer to this step as developing a Prototype 0.8. If we are changing a professional habit, rather than changing a system or micro-system of care, this step involves personal reflection, the will to change, and probably engaging a form of social support. The design step takes substantial trial and error (small steps of change). If one is redesigning or reengineering an office or hospital practice process, it also takes multiple trials and errors. Each trial increases our knowledge about the system of care.

The fourth step in this cycle is to **execute the change processes** (or habit if making a personal change) for delivering care throughout the system. This is variously called implementing successful pilots or spreading the change throughout the organization. This step requires leadership, group process, influence and re-distribution of resources.

This blue cycle is the essence of practice-based learning and improvement, that is learning form measurement and reengineering of the practice system or at the individual level, making changes in habits of practice. As Kurt Lewin, the founder of “action research” said, “You can not really know a system until you engage it and attempt to change it.”

Education

The yellow boxes and arrows on the model show some elements of the formal education process. It is impossible to make practice-based changes when we lack the basic knowledge and skills or are unaware of innovations in the field. Formal education is essential for giving the novice learner sufficient information and instrumental skills to be able to engage in a practice.
The participants in November 2008 Macy conference on Continuing Education in the Health Professions uncovered these elements as they explored external sources of influence and knowledge on physicians and their practice. Continuing education begins with reading scientific publications in medical journals or reading professional society guidelines. These are assessed and then applied to the blue change cycle or they are converted into educational course material and taught to physicians or students. Local clinical conferences, which are the most common source of CME, and point-of care information resources (e.g. UP-TO-DATE) are used often in practice. Learning from peer consultation, referrals, pharmaceutical and device marketing representatives, and local lab and imaging vendors’ training to use their services are important sources of new knowledge that are not considered to be traditional CME. Lastly, the newest form of continuing education is the practice-based learning and improvement collaborative that use the measures and experience with the systems of practice to advance local knowledge and improve results. The model shows the interrelationship of these learning and information dissemination activities. The arrows indicate which part of the learning and improvement cycle each influences.

**Systems of Care**

Shown in green are the external organizations (mainly policy, consumer, and financial and regulatory organizations) that affect the resources available to the practice system. These may actually be the most influential forces in creating new knowledge, changing habits, and altering the outcomes of care, although the influence is often indirect and at times perverse. The diagram begins with health plans (and payers) who control the flow of money to the practice and therefore the source of new resources needed to make changes in the quality of care. Certainly, payment policy drives physician and practice behavior. Purchasers, employers, and CMS drive health plan policy and payment structure. The health plans drive the hospitals and medical group staffs and administration. Hospital medical staffs and medical groups are strong organizations for the local learning needed for implementing changes in the processes for delivering care. Patients are an important user of practice outcome measures. Obviously patients’ choices of physicians are linked to health plans’ and purchasers’ policies. Although patients have little direct influence on the practice system of care, their backlash to managed care policies made sudden and profound changes in the health care system. The last component of the policy system is the medical and licensing boards, which are beginning to use measures of performance in practice as a component of their maintenance of certification programs and maintenance of licensure programs.

**RESEARCH**

The pink boxes Research complete the model. The measure which are used by boards, patients, and health plans to influence the delivery of health care are also used to develop new hypotheses and to expand the theory of health and medicine. These ideas convert to new local knowledge for quality improvement. This information is a powerful motivator for physician change. The theories developed to explain the measures obtain can be studied in research experimentation to produce new scientific knowledge that is
generalizable across practices and which can shape new knowledge and new public policy. The cycle is now complete.

**USING THE MODEL IN MEDICAL EDUCATION**

The model can be used to help first and second year medical students and basic science faculty understand where the core knowledge about the normal structure and function of the human body, the elements of health, and the signs, symptoms and mechanisms of disease are essential theoretical knowledge needed to begin working in clinical settings.

The model can show clinical students, residents and faculty how clinical habits are learned and honed through reflection in practice and practice-based learning. The learning cycle applied to a clinical microsystem is particularly useful in this regard.

The model shows faculty and practicing physicians the sources of medical education and influence in modifying and changing their habits and routines of care in response to scientific publications, course-work, conferences, peer consultations, and the influence of business-oriented vendors. The model shows faculty and students the important role of local knowledge derived from practice-based action research. It also shows the importance of empirical research needed to prove cause and effect relationships needed for the evidence-based practice of medicine.

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