regionsemquality: FrontPage

EM Residency Quality Wiki

Welcome to the EM Residency Quality wiki. I would like to use this tool to be the repository for the EM residency quality program. I suggest the following:
1. Develop guiding principles for the residency quality program.
2. Open the wiki to others.
3. Determine content experts by EM topic.
4. Develop process for EM residency projects.
I have attached some of the files from the 2008 Residency Retreat and files from a quality course that may be of interest to you. I'm looking forward to your feedback.
Felix

Quality Binder Fall08.pdf
GME Knowledge Translation from AEM.pdf
Begin to Use Clinical Outcomes from Acad Med.pdf
Using Pt Care Quality Measures from AEM.pdf
2004 06 25 Bulding a quality educational program (2).ppt
Kim QI Project.pdf
2008 10 23 quality GME integration.xls
Ankel email of 2005 03 11 (3).pdf
QI bottom up vs top down.pdf

CORD emails re IOM Report.txt
Coming Soon Quality Fair 2009!.txt

MatrixTutorial.pdf

schneider.pdf

Free help:

1. Learn how to use PBwiki: **The PBwiki Manual**
2. If you prefer video, watch a recording of our popular webinar, **PBwiki 101: Your Guide to Wiki Basics**.
3. Need more help? Sign up for a **Free introductory webinar**

regionsemadminrotation: Admin Rotation

Dear (First Name):

You are scheduled to begin your Tox/Admin rotation Monday, (date). Attached, please find the following:

1. Goals and objectives of the admin curriculum
2. Admin three-ring binder containing administration materials
3. A CD containing administrative articles
4. A copy of your meeting schedule (also listed on your Tox schedule).

The requirements of your rotation are the following:

1. Read the following chapters from Chief Resident as Manager:

- Chapter 10 – Administering your Program
- Chapter 11 – Managing Meetings
- Chapter 12 – Developing a Career Plan

2. Read the following articles on leadership, management, communication skills:

- Level 5 Leadership by Jim Collins
- The Real Reason People Won't Change by Robert Kegan and Lisa Laskow Lahey
- Fair Process by W. Chan Kim and Renee Mauborgne
- The Smart-Talk Trap by Jeffrey Pfeffer and Robert I. Sutton
- Pitfalls in Meetings and How to Avoid Them by Edward Prewitt

3. Read Bylaws and Rules and Regulations of the Medical Staff.

4. Attend the following meetings as listed on your schedule and complete a Meeting Hygiene list for each meeting. Faculty contact is listed in parentheses; have a pre-meeting discussion with the faculty to discuss purpose of meeting and historical context. During each meeting, observe leadership, management and communication styles. After each meeting, have a de-brief with the faculty contact. Return copy of Meeting Hygiene Checklist to Lori Barrett.

- Med Exec (Kurt Isenberger)
- ED Operations (Rachel Dahms)
- P & T (Carson Harris)
- Patient Care (Carson Harris)

- Credentials (Won Chung)
- GMEC (Felix Ankel)
- Residency Committee (Felix Ankel)

If you have any questions, feel free to contact me.

Sincerely,
Felix Ankel, MD
Residency Director
Emergency Medicine
Regions Hospital

Felix Ankel

From: Felix Ankel [ankel001@tc.umn.edu]
ent: Friday, March 11, 2005 11:00 AM
o: 'robert knopp'; 'Brent.R.Asplin@HealthPartners.com'
Cc: 'Won.G.Chung@HealthPartners.com'
Subject: RE: clinical variation among staff

This is an area close to my heart and one that Brad G and I have been discussing from time to time. Brad calls this nodes of expertise. To get on my soapbox

"My vision is to increase the amount of medical knowledge that is effectively translated from what is known and what is practiced. My goal is to develop curricula and lead educational systems that are learner centered, multi-disciplinary, web based, "open source", continuously available and accessible, experientially focused, and outcomes based. I believe creating innovative curricula, continuously mentoring students, residents, and faculty, and systematically capturing the wisdom of learners and teachers for dissemination best achieve this."

I think this translation piece is the rate limiting factor for quality care and have been setting the groundwork for a Regions EM defined best practice in care (rather than relying on interpretation of former clinician of external proprietary guidelines)

This is what is set so far.
1. EMREL library to archive and search residency wisdom (e.g. can search Knopp + UTI) 2. Emres listserve that facilitates dialogue between practitioners inside and outside the department 3. 18 month curriculum that addresses breadth of EM content 4. 20+ faculty with defined core content "expert" designation

This is what we have but haven't tapped into for this
Education volunteer willing to focus speakers to ensure didactics are of appropriate eadth AND depth and facilitate wisdom posted on emrel in organized manner 2. EMR implementation with ability to link potential diagnosis to Regions defined best practices

These are thoughts I've considered
1. Each resident (27) is a core content expert when they start the residency and is paired with the core content expert faculty. One of their administrative projects is to develop one best practice guideline/per year with their faculty expert. They also review the other guidelines with their faculty on a yearly basis. This will allow each graduating resident to have the breadth of EM knowledge with and area of specified depth plus the experience of writing clinical guidelines 2. The clinical guidelines are living documents where proposed updates are presented on the emres list. Residents and faculty can be instructed to use JADE for this (journal articles delivered electronically) in a push me method. 3. The regions clinical guidelines are cross referenced and linked to our EMR 4. All 27 areas are reviewed in conference as a state of the art panel with the resident and faculty. E.g. we would have a state of the art panel every two weeks (state of the art panels would be 10-15% of all conference time, this will still allow for "core" board type material)

I think great discussion piece for strategic plan. This is one way of reducing MD variation and falls in nicely within the IOM,IHI, Leapfrog, ?Partners for health indicatives (the GE leapfrog equivalent). I think it would be more robust than milliman or Interqual, it addresses acgme issues such as systems based practice and practice based learning, it ultimately will help patient acre and health care education, and can serve as the foundation of our academic research, educational, and operational initiatives for our department.

Thoughts??

- lix

-----Original Message-----
From: robert knopp [mailto:knopp003@umn.edu]
Sent: Tuesday, March 08, 2005 11:43 AM

To: Brent.R.Asplin@HealthPartners.com
Cc: Felix Ankel; Won.G.Chung@HealthPartners.com
Subject: clinical variation among staff

Over the past six months, a recurring question has been posed to me: a resident or staff indicates that they recently reviewed a state of the art paper or attended a conference that reviewed best practices in a certain area and that there is substantial variation in how we do things in our ED regarding clinical condition X such that we are not achieving what we should be doing. Most recently the issue raised was management of CHF. But examples of other issues include aspects of trauma care, mesenteric ischemia, appropriate use of heparin for PE, airway management, antibiotic use.

I know that there are other issues consuming a lot of time. However, I do think for the more common clinical problems we need a strategy to narrow the variability and increase the frequency with which patients are treated with the latest information.

Bob

Joint Commission Journal on Quality and Patient Safety

Health Professions Education

Using a Healthcare Matrix to Assess Patient Care in Terms of Aims for Improvement and Core Competencies

John W. Bingham, M.H.A.
Doris C. Quinn, Ph.D.
Michael G. Richardson, M.D.
Paul V. Miles, M.D.
Steven G. Gabbe, M.D.

In 2001, the Institute of Medicine (IOM) presented a compelling case for its claim that the difference between the "health care we have and the care we could have" represents much more than a gap, but rather a chasm,[1] and that the health care quality chasm persists alarmingly unchecked.[2,3] Unfortunately, a chasm also exists between the medical education that we have and that which we could have.[4,5] The IOM identified "reform of health professions education critical to enhancing the quality of health care in the United States."[1]

The challenge is to create a system in which the following are true:

- The care of every patient has the potential to improve the care of all patients yet to come
- Competencies are integrated into the routine practice of daily care
- Decision making regarding care of the patient is guided by the best evidence available
- The quality of health care is positively related to the quality of medical education.

The IOM recommended that to address the chasm in health care quality, all health care organizations, professional groups, and private and public purchasers pursue six Aims for Improvement in health care.[1] These "dimensions of quality" describe a health care system that is safe, timely, effective, efficient, equitable, and patient centered.

Article-at-a-Glance

Background: In 2001, the Institute of Medicine (IOM) recommended six Aims for Improvement; the dimensions of quality describe a health care system that is safe, timely, effective, efficient, equitable, and patient centered. In 1999, the Accreditation Council of Graduate Medical Education (ACGME) adopted six core competencies that physicians in training must master if they are to provide quality care. A Healthcare Matrix was developed that links the IOM aims for improvement and the six ACGME Core Competencies. The matrix provides a blueprint to help residents to learn the core competencies in patient care, and to help faculty to link mastery of the competencies with improvement in quality of care.

Healthcare Matrix: The Healthcare Matrix is a conceptual framework that projects an episode of care as an interaction between quality outcomes and the skills, knowledge, and attitudes (core competencies) necessary to affect those outcomes. For example, an anesthesiology resident used the Healthcare Matrix for a complex 18-hour episode of care with a life-threatening situation.

Ongoing Work and Research Agenda: Collecting and analyzing a series of matrices provides the foundation for systematic change in patient care and medical education and a rich source of data for operational and improvement research.

In 1999, the Accreditation Council of Graduate Medical Education (ACGME) focused on the shortcomings of graduate medical education (GME) and set the following goals:

- The content of graduate education is aligned with the changing needs of the health system
- Residency programs use sound outcome assessment methods for both the residents' and programs' achievement of educational outcomes[6]

The ACGME adopted six core competencies that physicians in training must master if they are to provide quality care. The American Board of Medical Specialties (ABMS) has adopted these same competencies as the basis for the standards of certification and maintenance of certification for all specialty boards,[7] making this framework equally valuable for all practicing physicians.

This article introduces a Healthcare Matrix that links the IOM Aims for Improvement and the six ACGME Core Competencies. The matrix provides a blueprint to help residents to learn the core competencies in their daily work of caring for patients and to help faculty to link mastery of the competencies with improvement in quality of care. The matrix also provides a framework for educators to use in curriculum and program redesign. Data collected in completing the matrix can be used to generate new knowledge for operational and outcome improvements and research for both resident education and the delivery of care.

Challenge of Teaching and Assessing the Core Competencies

Teaching and evaluating the core competencies essential for quality health care is an evolutionary process without a prescribed formula.[6] Most academic institutions have focused on identifying summative assessment tools to evaluate residents' acquisition of the competencies, which presumes that the competencies are being taught and learned effectively. In reality, teaching and assessing the less formally defined competencies—*professionalism*, *communication and interpersonal skills*, *systems-based practice*, *and practice-based learning and improvement*—has been problematic even for experienced clinicians and educators. Teaching *system-based practice and practice-based learning and improvement* has been especially daunting for faculty without experience in quality improvement.[8] For these reasons, and acknowledging the dependency of quality medical education on the presence of quality medical care and improvement, we introduce a formative approach to the presentation of the core competencies to residents, which in turn is having an effect on the faculty and their patient care.

The Healthcare Matrix

The Healthcare Matrix (Figure 1, page 101) is a response to the challenge of linking all six competencies mandated by ACGME with the realities of the current system of medical education, which is usually more focused on the acquisition of medical knowledge. It is a conceptual framework that projects an "episode of care" as the large and complex picture that it is yet provides a glimpse into the interaction between quality outcomes (IOM Aims for Improvement) and the skills, knowledge, and attitudes (ACGME Core Competencies) necessary to affect those outcomes. The matrix is intended to make readily apparent the tight linkage between competencies and outcomes.

The first row (Patient Care) is meant to be an assessment of the quality of the care. For example, was care safe? If the answer is "yes," this is written in that cell. Was care timely? If it wasn't, the cell gets a "no." Next, for each column that receives a "no," the four specific ACGME competencies (medical knowledge, professionalism, system-based practice, and interpersonal and communication skills) are examined in terms of their contributions to the care of the patient. Finally, suboptimal performance is synthesized into the implementation of improvement strategies (practice-based learning and improvement).

Two examples are provided to illustrate our pilot work with the Healthcare Matrix in two different resident learning settings. A facilitator [D.C.Q.] first attends a typical case or mortality and morbidity (M&M) conference and documents the presentation and discussion on a blank matrix framework. She then shares the matrix with the group as a means of discussing the six competencies, highlighting what was missed of the competencies. Sometimes the matrix is sent to the resident for additional reflections (see Example 2, page 103). Eventually, the residents will use the matrix to prepare their case presentations and M&M conferences. The most beneficial

Healthcare Matrix for a Patient with Pregnancy and Disseminated Intravascular Coagulopathy

IOM / ACGME	SAFE[1]	TIMELY[2]	EFFECTIVE[3]	EFFICIENT[4]	EQUITABLE[5]	PATIENT-CENTERED[6]
Assessment of Care						
I. PATIENT CARE[7] (Overall Assessment)	Despite direct medical attention, patient nearly died from hemorrhagic shock	Life saving treatment was delayed for variety of reasons	Delays in treatment impaired effectiveness of therapy	Resources (blood products, staff time) were not utilized in an efficient manner.	Did patient's ethnicity, socio-economic, education status influence the level of care she received? Did the time of night influence care?	Patient was not adequately apprised of her own health problems and did not participate fully in her care decisions
II. a MEDICAL KNOWLEDGE[8] (What must I know)	Priorities in hemorrhagic shock are ABC: ensure oxygen delivery, support BP, aggressive IV resuscitation, treat cause	Hemorrhagic shock is life-threatening emergency: Prompt diagnosis, recognize urgency, initiate therapy, incl. timely transport to OR. Diagnosis was made late. No urgency to treat. Delay in contacting Anesth. Inadequate assistance in transport to OR	D.I.C. in pregnancy: Physiology, diagnosis, causes, treatment. Regional v. General Anesth? Post resuscitation pulmonary edema. Hypocalcemia due to massive transfusion. Invasive monitoring indications. Pharmacology of uterotonic drugs.	Survival in postpartum hemorrhage requires aggressive IV resuscitation: always consider combining procedures (start 2nd IV while drawing blood sample for transfusion cross match).		
II. b INTERPERSONAL AND COMMUNICATION SKILLS[9] (What must I say)	Safety is jeopardized unless team members are fully apprised of patient's condition (blood loss following delivery, vital signs, plans for intervention).	Orders (blood cross match) must be prioritized and fully implemented in a timely fashion.	Effectiveness of life-saving intervention depends on effective communication between team members.	Communications of a defensive or argumentative nature are counter-productive to efficient and sage care. The focus should be patient care, with analysis of misunderstandings at a later time.		Must communicate patient's condition and intended interventions (blood transfusion, emergency hysterectomy), and in a way that is understandable and useful to the patient, respecting patient autonomy.
II. c PROFESSIONALISM[10] (How must I act)			Professional duty to accompany critically ill patient to the OR, to ensure safety, and to expedite therapy.		Patient's ethnic, socio-economic, "service patient" status should have no effect on quality of care.	Professional duty to attempt to preserve patient autonomy (make sure patient understands situation and interventions)
II. d SYSTEM-BASED PRACTICE[11] (On whom do I depend and who depends on me)	System must ensure that appropriate consultants are notified when needed to ensure safety in life-threatening medical condition.	During postpartum bleeding, type & cross match must be drawn, sent, and verified promptly. Failure to do so threatens life.	Failures to draw, send, and verify cross match blood sample jeopardizes effectiveness of life-saving therapy.		Standard of care should not vary due to differences in staffing that results from time of day / night (availability of lab medicine physician, timely transport of blood samples, adequate number & expertise of obstetrics, anesthesiology, & nursing staff)	
Improvement						
III. PRACTICE-BASED LEARNING AND IMPROVEMENT[12] (How must I improve)	Policy and procedure changed for Mom/Child in trouble	Revise the criteria for and system of communicating urgent/emergent request for Anesthesiology consultation	Departmental Teaching Conference on management of parturient with D.I.C.	Procedure outlined for fastest prep for OR		Increased awareness of need to consider patient centeredness even in emergent or crisis situations. Communication with father / family members when appropriate and possible.
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Figure 1. *The use of the Healthcare Matrix to analyze a complex episode of care that took place in the course of 18 hours and involved a life-threatening situation is described in Example 1. The most important cells are outlined. ACGME, Accreditation Council of Graduate Medical Education; IOM, Institute of Medicine; IV, intravenous; OR, operating room. The IOM dimensions of care and the ACGME Core Competencies are explained in the legend for Figure 2.*

learning comes from the residents having to think about each cell as it relates to their presentation.

Example 1. Anesthesiology Resident

The first example presents the learning experience of a resident who used the Healthcare Matrix to analyze a complex episode of care that took place in the course of 18 hours and involved a life-threatening situation. The matrix prompted the resident and other team members to look beyond the compelling medical issues to explore the significance of competencies and dimensions of care that represented the real threats to life in this case. Ultimately, this exercise led to consideration of process changes designed to improve care.

A senior anesthesiology resident and her supervising attending [M.R.G.] were summoned urgently in the middle of the night to provide anesthesia for a young mother who had delivered a healthy term infant an hour earlier. Postpartum bleeding necessitated uterine exploration under anesthesia. Initial assessment revealed hypovolemic shock and continuing vaginal bleeding but only a single intravenous (IV) line. A call to the blood bank revealed that no blood was immediately available because the patient's blood sample had been received only five minutes earlier. Suspecting disseminated intravascular coagulopathy (DIC), the anesthesia team immediately placed a large-bore IV and began aggressive resuscitation with IV fluid and type-specific but uncrossmatched blood products. Within 15 minutes the patient's vital signs stabilized and her symptoms of shock resolved. During the next 1½ hours, she underwent a life-saving peripartum abdominal hysterectomy, with > 5 liters of blood loss and a total of 7 liters of IV fluid and 31 units of various blood products transfused. She subsequently experienced pulmonary edema on the first postoperative day, a further decrease in hematocrit (requiring additional blood transfusions), and symptomatic hypocalcemia due to massive transfusion, yet was discharged home on her fourth postoperative day.

This highly complex episode of care was replete with learning points in all core competencies and dimensions of care—medical knowledge and patient care issues (chorioamnionitis, pathophysiology and treatment of DIC, massive transfusion, and so on), professionalism/ethical issues, equity, timeliness of communication, effectiveness of teams, systems (protocols for consultation and crisis prevention and management), and practice-based improvement. In fact, although the DIC was a life-threatening development, these other system-related factors lay at the heart of this near miss. Considering the patient's age and parity, it must be argued that the catastrophe was not completely averted because her fertility was permanently sacrificed.

The case formed the basis of an extended resident learning exercise. The attending asked the resident to write a detailed account of the peripartum course, including all clinical details, events, team communications, and time line. The resident was also to compile an exhaustive list of "important learning topics and issues prompted by reflection of the details of this case (no particular order)." The attending anesthesiologist performed the same exercise independently.

The resident's list of learning topics was as follows:

1. DIC—what is it?
2. DIC in pregnancy—what are the causes?
3. Fibrinolysis in DIC (significance of an in vitro clot test)
4. Local anesthetic toxicity
5. Postpartum hemorrhage with regional anesthesia versus general anesthesia
6. Pulmonary edema secondary to massive transfusion/volume resuscitation
7. Hypocalcemia from massive transfusion
8. Blood-tinged epidural aspirate—significance?
9. Carboprost, misoprostol, and methylergonovine maleate-indications and uses
10. Third-spacing—can specific IV fluids prevent it?
11. Arterial-line indications—use with massive transfusions or not?
12. Who needs a type and cross? Why does it take 30 minutes?

Of the 12 learning points, all but one (point 12) focused entirely on the intersections between the competencies *medical knowledge* and *patient care* and the dimensions *effectiveness* and *safety*—representing only 4 of the 36 cells of health care. Learning point 12 included the Systems/Timeliness cell.

The attending physician inserted his recollections into the resident's narrative, focusing especially on the team interaction and communication issues omitted

from the resident's draft. He then asked the resident to use the Healthcare Matrix to discuss the individual competencies and dimensions and the implications of the intersecting cells. He explained how this episode of care and other episodes of care could be viewed in terms of each of the cells, with reflection on what was done and how the various facets of care contribute to the outcome, and ultimately consideration of what was done well and what was suboptimal and could benefit from improvement.

The resident returned a matrix that was much richer, now including entries in 17 of 36 cells (Figure 1). The resident chose to use this case for a one-hour, departmental senior resident case presentation identifying the learning points she wished to include. Approximately two-thirds of her presentation focused on the scientific and clinical aspects of normal and abnormal homeostasis, and the management of DIC. The final third of her presentation centered on the systems, communication, and team issues that contributed to the near-catastrophic outcome, introducing these by way of the Healthcare Matrix model. During the 15-minute discussion period, questions and comments offered by faculty and residents in attendance concerned the many cells representing the intersections of competencies (especially communication, systems-based practice, professionalism, practice-based learning and improvement) and dimensions of care (especially safety, timeliness, patient-centeredness, equitability, effectiveness).

The resident's presentation of this case prompted the obstetrical anesthesiology faculty to partner with the obstetricians and obstetric nursing staff to improve the team's processes involved in responding to urgent obstetrical situations. During a debriefing interview with one of the authors [D.C.Q.], the resident reflected on the learning exercise and the matrix's usefulness in contributing to her learning. The resident viewed the Matrix as pivotal to opening her eyes to the many competencies other than medical knowledge which are critical to optimal healthcare delivery. Based on this presentation, the Department of Anesthesia will use the Matrix to frame M&M conferences.

Example 2. Psychiatry Resident

In a second example, the Healthcare Matrix was used to enhance learning in a psychiatry resident case conference. In the matrix for this example (Figure 2, page 104) the resident's additional content is initialed [WH]). The psychiatry residents now use the matrix to prepare their case conference presentations, and the program director uses it to ask questions during the presentations. Two lessons learned by the residents are that not all cells need be filled in and that it is helpful to border the most important cell(s) in red.

Creating and Reinforcing a Culture of Learning

The matrix is intended to help consider patient care in terms of the IOM Aims and the ACGME Core Competencies rather than make these dimensions add on to an already compressed duty-hour week. Faculty use the matrix to enhance the learning experience for every resident. We are slowly creating an environment where learning can occur with other members of the team, where data are gathered and reviewed, and where decisions are made in a collaborative manner rather than in an environment characterized by "embarrassment, blame, shame and sometimes humiliation"[9] for the residents. This new learning environment represents a shift in culture that acknowledges the resident as part of a system of care, in which he or she learns *in* and *about* the system of care.

The matrix provides a common framework for evaluating and improving patient care across all disciplines. For example, pediatrics residents are teaming up with the nursing staff and managers to improve the residents' continuity clinic. The residents had identified many system issues in care of a child with asthma, and when they brought this to the attention of the nursing manager, she stated that a team was already working on those issues. The pediatric residents were then invited to be part of the process flow team. When the matrix was used to analyze suboptimal outcomes associated with femoral vein cannulation, faculty and residents established a multidisciplinary team to decide on orders, policies, and procedures for venous cannulation.

Ongoing Work and Research Agenda

The Healthcare Matrix is being used in a variety of settings and is the focus of a research agenda.

Healthcare Matrix for Care of a Patient with Schizophrenia (and Auditory Hallucinations)

IOM / ACGME	SAFE[1]	TIMELY[2]	EFFECTIVE[3]	EFFICIENT[4]	EQUITABLE[5]	PATIENT-CENTERED[6]
	Assessment					
PATIENT CARE[7] **Overall Assessment**	NO This patient is at risk for suicide.	NO Not timely from adolescence and too many providers delayed good care.	NO Medication regime NOT effective.	NO Not efficient in medication use.	Not sure this was a problem Minority male who had prison record.	NO Many different healthcare systems failed this person.
MEDICAL KNOWLEDGE[8] **(What I must know)**	Medications: significant part of treatment. Knowledge of type, dosage, when to add, Clozapine only drug that can prevent suicide. (WH) Algorithm would be helpful. Suicide ideation at each visit but formal suicidality plan developed with patient and mother would be beneficial	Probably not well medicated and treated during early adolescence (prodromal). Psychosis was allowed to "set in" because of delay in getting treatment. (WH) Schizophrenia algorithm which is being developed would have helped this patient. School based education for early warnings signs of mental illness would have been helpful.	Medications: typical vs atypical. Actions, tissue residual, when to change and how. Dr. M has algorithm for drug therapy. Believes and stop and switch with no cross-tapering. Look at EBM. (WH) Recommend putting algorithm online, having an allotted daily time to consult with attendings on the more difficult cases would be helpful in better delivery of effective, EBM-care	Try mono-therapy first and add as needed. Don't try treating every symptom from the beginning. (WH) Algorithm	Effects of race, gender, Socio-econ status, on Dx of Schizo? (WH) Would be interesting to look at age, sex and diagnosis (with equivalent ages of onset) matched CAPOC patients with similar diagnosis to see whether they receive compatible care.	Cognitive impairment with Schizo is severe and cannot deal with life stresses despite average IQ. (WH) Feel that multi-dimensional team looking at all aspects of patient's life might provide patient with more opportunities to function, community-ie automatic neuropsych testing for pre-existent learning disorders, occupational assessment, etc.
PROFESSIONALISM[9] **(How I must act)**		Family MD had sleep med ordered, but was totally inadequate. Created more delays in helping him. (WH) Knowing standard of care for patients with schizophrenia is duty of physician.	Pharmacologically there were problems with his Tx. Should have some communication with community physicians who did not know best Tx for this serious illness.			Attitude of past history of convictions and jail time, of ETOH and drug use, poor personal hygiene and obesity.
INTERPERSONAL AND COMMUNICATION SKILLS[10] **(What I must say)**	Suicidal ideation: Accusation of probation violation led to overdose of meds. Feels "hopeless" which is key symptom to watch. (WH) Seeing patient on regular scheduled basis – discuss frequency of tx with supervisor/team. Have open communication with caregivers. Have family involved.	(WH) Having specific time slot each day in MH clinic during which expectation will be that psychiatrist communicate with PCPs, school counselors, consulting physicians. Initially feel attempted phone contact would be indicated followed by other means of communication – email, fax, etc… having permanent liaison (i.e. social worker) for TNCARE patients at CAPOC would allow external community to interact with someone until treating psychiatrist could call/email back.	Patient needs to have insight into his illness and be offered hope that it can be treated. (WH) As communication skills can be taught and innately developed and individuals have varying levels of expertise, an initial helpful aid for educating patients would be to develop templates which can be accessed by treating psychiatrist (preferably online) which would be a suggested "idealized" discussion for providing patient with insight and hope into his illness (taking into account resources available to patient/family in this community). This can then be modified by individual psychiatrist as he/she develops greater communication skills, knowledge, etc…			He is ashamed of his situation, does not want to talk about it, family situation difficult with 3 younger brothers. (WH) Involvement of family members could be improved. Would consider having intermittent appointments with entire family in the future. Having permanent social worker at CAPOC to facilitate interactions with families would be extremely helpful. Mother supportive, 3 brothers (normal) who may not understand illness. Patient feels very ashamed. (WH) Attempt to have intermittent family meetings. Again having a "treatment team" working within the clinic for more intensive patients would be helpful.
SYSTEM-BASED PRACTICE[11] **(On whom do I depend and who depends on me)**	Support groups to help him understand his illness. (WH) Patient should be assigned to one of the clinic groups, communication lines between PCPs, consulting physicians could be improved to allow external non-psychiatric tx providers means with which to quickly contact psychiatrist should need arise. Social worker liaison would be very beneficial in this capacity.	No mechanism in HC system to pick up young people with mental health issues like this. (WH) School-based education from elementary school kids upward with improved means for getting "kids" assessed and into the "system" could be developed. More school-based mental health clinicians.		(WH) Possible development of multidimensional team at CAPOC could have provided patient with a higher intensity of tx at the outset of illness, thus providing more efficient service.	(WH) Multidimensional team looking at different facets of patient's life might open up opportunities for work for patient. At this juncture, for a patient of this intensity, tools are cumbersome to provide a higher level of care.	(WH) Discussing issues of countertransference with supervisor team which might occur with patient and not having limited expectations for patient based on prior experiences. What does the literature say? How will the mother be supported since she is so worried about suicide? She has moved in with son. What other resources are available? Church, other HC resources?

continued

Healthcare Matrix for Care of a Patient with Schizophrenia (and Auditory Hallucinations), *continued*

ACGME / IOM	SAFE[1]	TIMELY[2]	EFFECTIVE[3]	EFFICIENT[4]	EQUITABLE[5]	PATIENT-CENTERED[6]
	Improvement					
PRACTICE-BASED LEARNING AND IMPROVEMENT[12] (How must we improve)	(WH) Improved knowledge of practice parameters, medication side effects, etc…	(WH) Better use of online tools and creating time within the day while in clinic to use them. Daily allotted time to consult with supervisors on patients seen that same day. Possible, "psychiatric attending du jour" who is available to treating physicians at various times throughout day.	Look at research Dr. M is doing to see hypotheses and new Tx options. (WH) Continued learning and review of practice parameters for schizophrenia. Using algorithm.	What does literature say about meds and how to create (algorithms) for better Treatment with no delays? (WH) Knowing where to find treatment of choice algorithms and how to access them quickly.	(WH) External and regular review of our treatment of patients by MD psychiatrists. If algorithms developed by "specialists" within our department, made widely available, distributed online and discussed, the external review should become superfluous.	What has been learned with this patient that could help him? (WH) Need to stress importance of involvement of intimate family members and other people within the "systems" that patient exists and care of the patient if at all possible. Learning how to do this in the most efficient manner.
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1 Safe: Avoiding injuries to patients from the care that is intended to help them.

2 Timely: Reducing waits and sometimes harmful delays for both those who receive and those who give care.

3 Effective: Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and overuse, respectively).

4 Efficient: Avoiding waste, including waste of equipment, supplies, ideas, and energy.

5 Equitable: Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socio-economic status.

6 Patient-Centered: Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.

7 Patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

8 Medical Knowledge about established and evolving biomedical, clinical, and cognate sciences (e.g. epidemiological and social-behavioral) and the application of this knowledge to patient care.

9 Interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, and other health professionals.

10 Professionalism, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

11 System-based practice, as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

12 Practice-based learning and improvement that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, and improvement in patient care.

Figure 2. *This Healthcare Matrix was used to enhance learning regarding the case presented as Example 2. The most important cells are outlined. ACGME, Accreditation Council of Graduate Medical Education; IOM, Institute of Medicine; Dx, diagnosis; EBM, evidence-based medicine; CAPOC (Child/Adolescence psychiatric outpatient care); Tx, treatment; ETOH, alcohol; PCP, primary care physician; TNCARE, Tennesee's Medicaid managed care system; HC, health care.*

Multiple Uses in Different Specialties

The Healthcare Matrix is being piloted at Vanderbilt University Medical Center and elsewhere in many specialties, including not only anesthesiology, psychiatry, and nephrology but also emergency medicine and internal medicine–ambulatory. It is also being used as a framework for transforming traditional M&M conferences into Morbidity and Mortality and Improvement conferences. The Children's Hospital at Vanderbilt University Medical Center has created a structure titled Performance Management and Improvement (PM & I) that includes use of the matrix for team learning. We have some positive preliminary data on how the matrix is helping to expand the context of learning for the residents and faculty but more data will be gathered to further validate the tool.

Enhancing Personal and Professional Development

Dreyfus and Dreyfus[10] teach us that novices benefit from algorithms and structured approaches to learning. Residents learn heuristics from textbooks, mentors, chief residents, faculty, and others. For example, all students learn to take a complete history and perform a thorough physical examination, a time-consuming process. When they know more about patient assessment, students are able to perform a focused version of the "history and physical." Likewise, the resident struggles with this matrix at first, but with experience becomes more facile with the tool, taking less time to complete matrix cells. The matrix provides a valuable technique for the clinician-educator to zero in on the aspects of care that are most important in the presentation of a given case.

At the conclusion of an episode of care, a resident and his or her attending physician debrief with the following questions, which address all cells in the matrix:

1. Was care for this patient as good as it could be?
2. What improvements in the competencies of the resident and faculty and changes in the system of care would result in improved care for the next patient?

Although a completed matrix provides a large amount of information, focusing learning at the "cell" level keeps the learner from feeling overwhelmed with all the dimensions of care. It is useful to ask "Relative to this patient condition, what knowledge do physicians need to know to improve patient safety?" or, "What cell or few cells had the greatest impact on this outcome, and why?"

Completing the matrix cells should itself teach all the core competencies. As learners seek to improve the systems, they will become competent in practice-based learning and improvement. A recent article by Ogrinc et al.,[8] which describes a framework for teaching medical students and residents about practice-based learning and improvement, should help residents use the matrix.

Documenting Learning

A completed Healthcare Matrix documents the ability to reflect on outcomes for a patient or panel of patients in terms of the gap between the care provided and the care that could be provided and encourages reflection on how this knowledge can be used to improve care. As improvements in care are made, patient outcome can be compared to assess their effectiveness. The matrix also provides a useful basis for documenting formative feedback as part of a summative evaluation. Instead of the faculty having to decide if the learner demonstrated the competencies, the resident will provide faculty with his or her portfolio and the learning/reflections related to patient care. We are developing an electronic portfolio to accommodate required data (duty hours, procedures, and so on) and data from the Healthcare Matrix.

Research Agenda

The Healthcare Matrix provides a framework for clinicians and teams to improve care of patients. Collecting and analyzing a series of matrices provides the foundation for systematic change in patient care and medical education, as well as a rich source of data for operational and improvement research. We are planning a qualitative research project in which examination of the completed matrices for each specialty will help identify the "quality characteristics" important for each specialty. We hope to be able to identify evaluation tools appropriate for each specialty. We are now tracking data over time from cells from matrices completed by ambulatory medicine residents to create a balanced set of measures to assess progress in patient care and resident education. J

John W. Bingham, M.H.A., is Director, Center for Clinical Improvement, Vanderbilt University Medical Center, Nashville, Tennessee; **Doris C. Quinn, Ph.D.,** is Director, Quality Education and Measurement Center for Clinical Improvement; and **Michael G. Richardson, M.D.,** is Associate Professor, Department of Anesthesiology. **Paul V. Miles, M.D.,** is Vice President and Director of Quality Improvement, American Board of Pediatrics, Chapel Hill, North Carolina. **Steven G. Gabbe, M.D.,** is Dean, Vanderbilt University Medical Center. Please send requests for reprints to Doris C. Quinn, Ph.D., doris.quinn@Vanderbilt.edu.

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