CASE: *62 year old woman with hypertension admitted for observation after sustaining a right humeral fracture and multiple rib fractures in an accident. There was incidental notation on chest x-ray of a possible mass overlying the R breast. Patient was discharged home on hospital day #2 with pain medications and asked to follow-up with her primary doctor 2 weeks after discharge. Patient was seen 3 times over the next 6 months for blood pressure checks. Six months after discharge, she presented to her primary doctor complaining of "an infection" over her R breast. She was subsequently diagnosed with invasive breast cancer.*

What are some of the quality concerns in this case?

(The case is fictional, drawn from multiple patient experiences, to illustrate some facets of quality improvement.)

Introduction to Quality Improvement (QI) and Patient Safety

Lisa Chew MD, MPH
Anneliese M Schleyer MD, MHA
Harborview Medical Center

Quality is the "degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." [Institute of Medicine (IOM),1990]. The IOM estimates that 98,000 people die each year in US hospitals due to medical injuries. Good quality means providing patients with appropriate services in a technically competent manner with good communication, shared decision-making, and cultural sensitivity [IOM 1991].

Quality health care should be **safe, effective, patient-centered, timely, efficient, and equitable**. It should also be **reliable,** capable of performing its intended function in the required time under existing conditions.

►**Challenges to Quality.** Lapses in quality can arise in three ways:

1. ***Underuse*** is the failure to provide a health care service when it would have helped the patient.
   Example: Failure to administer vaccinations at the time of splenectomy
2. ***Overuse*** is the provision of health services where the potential for harm exceeds the potential for benefit.
   Example: daily routine blood draws including chemistry panel and liver panel in patient awaiting nursing facility placement.
3. ***Misuse*** occurs when an appropriate process of care is selected but a preventable complication occurs and the patient does not receive the full potential benefit of the service.
   Example: A patient anticoagulated with warfarin is prescribed trimethoprim/sulfa for a skin and soft tissue infection during hospitalization. The patient returns to clinic with epistaxis and is found to have a supratherapeutic INR.

►**Evaluating Quality:** Measurement is an integral part of implementing and testing changes; measures tell us whether changes improve health services.

Quality can be measured in the following areas:

1. ***Structure*** denotes how a health care system is organized and the conditions under which care is delivered. Examples include medical record systems; physical plant; bed availability; radiology requisition forms; health team members such as doctors, nurses, therapists, dieticians; and appointment scheduling.

2. ***Process*** refers to the activities that constitute health care, such as diagnosis, treatment, prevention, education, monitoring, and counseling. Examples include diagnostic laboratories and imaging, medications prescribed such as beta blocker for coronary artery disease, wound care, and diabetic teaching.

3. ***Outcome*** is the change, desired or undesired, in individuals or populations, that can be attributed to health care. Examples include physiologic parameters, health status, patient knowledge, patient satisfaction, length of stay, mortality, and cost.

For all improvement efforts, measures must be balanced. When implementing a change, consider whether fixes to one system part may cause problems elsewhere. Example: decreasing hospital length of stay by discharging patients "quicker and sicker" may lead to increased wait times to obtain an outpatient appointment for all patients.

►**Internal and external and internal forces affect quality:** Studies have demonstrated a significant gap between what the US health care system provides and its full potential. External and internal forces increasingly promote quality standards.

Internal forces: institutional mission, challenges related to residency training, work force constraints such as a nursing shortage. All institutions must work to create a culture of quality and safety. Taking care of patients using a respectful, multidisciplinary team approach is crucial, as are open communication lines and transparency.

Harborview Medical Center Quality Improvement

Patient Safety Net (PSN)
If you identify any adverse events or "near misses" while you are caring for patients – either structure, process or outcomes issues – please enter the information into PSN – an icon is located on every desk top and computer in patient care areas at Harborview.

Each incident entered into PSN is reviewed by a department manager or a quality improvement representative. In addition, please feel free to contact anyone in the Department of Quality Improvement or your departmental QI representative (Anneliese for Department of Medicine – schleyer@u.washington.edu).

Case Review
Cases reviewed are identified from PSN, monthly resident Morbidity & Mortality Conferences, referrals from other treating services or clinicians, Infection Control Committee, Quality Improvement Department, or Risk Management.

All cases referred to Quality Improvement are reviewed and scored (see Appendix A). Quality score is accompanied by a description of the review and recommendations for improvements/action items identified.

External forces include public reporting of data, pay for performance, Leap Frog initiatives – www.leapfroggroup.org, JCAHO, laws, national patient safety goals, and The Group for Patient Safety.

These also include the *Saving 100,000 Lives Campaign* that focuses on some of the following measures: Rapid Response Teams, acute myocardial infarction, preventative adverse drug events (ADEs), central line infections, surgical site, infections, and ventilator-associated pneumonia.

For select quality measures that are collected nationally and include comparisons between individual hospitals and Harborview (and which will eventually become standards for pay-for-performance), please see Appendix B.

Case Follow-up and Discussion

The case was referred to the QI committee by a physician seeing the patient in follow-up. An in-depth review indicated that the possible breast mass was noted in the dictated Radiology report, documented on the ED note, and in the admission note. The primary care doctor reviewed the discharge summary during a 15-minute follow-up visit, but there was no mention of the possible mass, and there was no evidence of additional communication between the hospital physician and primary care doctor. The patient did not recall hearing about a possible breast mass.

Some quality issues identified include:

Structure:

The medical record system at many hospitals is very complex and does not ensure that all critical information is communicated to the persons that need to know – for example – the patient's outpatient provider and the patient herself!.

Process:

There was no evidence of direct communication between the inpatient provider and the patient/her outpatient provider

Outcome:

This case illustrates a delay in diagnosis. It is unclear whether this delay directly affected the patient's outcome.

This case also illustrates "underuse" as an electronic record of the radiology report or the admission note could have been forwarded to the primary care provider or given to the patient directly. (Never underestimate the value of involving a patient in his or her own care and making him/her part of the continuity link!)

The case was scored as a "4". The following recommendations were made:

1) send detailed descriptions of test/radiology results to outpatient provider for critical item contact provider directly by telephone/email/fax.
2) notify the patient of need for follow-up and give him/her and his/her caregivers verbal and written information describing this.
3) identify "action items" on any discharge summary

References

1. www.ihi.org
2. http://www.jcaho.org/
3. Blumenthal D. Quality of health care. Part 1: Quality of care – what is it? NEJM. 1996;335:891-94.
4. Brook RH., McGlynn EA, Cleary PD. Quality of health care. Part 2: Measuring quality of care. 1996;335:966-970.
5. Chassin MR. Quality of health care. Part 3: Improving the quality of care. NEJM. 1996: 335:1060-1063.
6. Blumenthal D. Quality of health care. Part 4: The origins of the quality-of-care debate. NEJM. 1996; 335:1146-1149.
7. Berwick DM. Quality of health care. Part 5: Payment by capitation and the quality of care. NEJM. 1996;335:1227-1231.

8. Blumenthal D and Epstein AM. Quality of health care. Part 6: The role of physicians in the future of quality management. NEJM 1996;335:1328-1331.

Last updated: November 3, 2006, 2006/ AMS

Appendix A

Quality of Care Scoring

0 = **"No Quality of Care Concern Identified"**

There was no variation from a generally agreed upon standard of care, no delayed diagnosis, and/or no medical error involved?

1 = "Near Miss or Reached Patient – Low Risk to Patient"

Variation in practice, delayed diagnosis or medical error DID or DID NOT reach the patient, did not effect hospital course or well being AND was not associated with clinically significant increased risk to patient.

2 = "Near Miss – High Risk to Patient"

Variation in practice, delayed diagnosis or medical error DID NOT reach the patient, did not effect hospital course or well being BUT was associated with a clinically significant increased risk to patient.

3 = "Event Reached Patient – Additional Care Required or High Risk to Patient"

Variation in practice, delayed diagnosis or medical error reached the patient and
1) resulted in escalation of care (eg. additional monitoring, new drugs, ventilator, specialty consult), new or prolonged ICU, recovery room or hospital stay; OR
2) was associated with clinically significant risk to patient.

4 = "Event Reached Patient – Potentially Life Threatening or Disability"

Variation in practice, delayed diagnosis or medical error resulted in extended or permanent disability or was potentially life-threatening.

5 = "Event Reached Patient – Life Threatening or Death"

Variation in practice, delayed diagnosis or medical error resulted in death or was life threatening..
Cases are classified as to whatever variation in practice delayed diagnosis or medical error was an issue of judgement, technique, management or communication.

Appendix B
HMC QUALITY MEASURES January – December 2005 Medicare Data

Quality Measure	**Top Hospitals GOAL**	HMC	Average All US Hospitals	Average Washington Hospitals
PNEUMONIA				
Antibiotics within 4 hours of arrival	92%	58%	77%	77%
Blood culture prior to antibiotics	93%	76%	82%	83%
Appropriate initial antibiotics	91%	88%	79%	77%
Oxygenation assessment within 24 hours	100%	100%	99%	99%
Pneumococcal vaccine ≥ 65 years	89%	32% (n=71)	59%	56%
Influenza vaccine ≥ 50 years		35% (n=58) (Q1+Q4)	n/a	n/a
Smoking cessation (must be documented)	100%	71% (n=127)	73%	69%
ACUTE MYOCARDIAL INFARCTION				
ACE Inhibitor/ARB for LV systolic dysfunction	100%	88%	80%	82%
Aspirin at arrival	100%	99%	92%	96%
Aspirin at discharge	100%	99%	89%	92%
Beta-blocker on arrival	100%	100%	86%	92%
Beta-blocker at discharge	100%	99%	88%	92%
PCI within 120 minutes of arrival (STEMI)	88%	50%	65%	72%
Smoking cessation (must be documented)	100%	87%	82%	79%
HEART FAILURE				
LV function assessment	98%	98% (n=218)	81%	81%
ACE Inhibitor or ARB for moderate-severe LV systolic dysfunction	100%	89% (n=138)	81%	81%
Smoking cessation (must be documented)	100%	68% (n=99)	76%	66%
*Complete Discharge instructions (must include **ALL** of the following)*	89%	47% (n=198)	54%	41%
Discharge instructions: Medications	n/a	75%	n/a	n/a
Discharge instructions: Activity	n/a	99%	n/a	n/a
Discharge instructions: Diet	n/a	100%	n/a	n/a
Discharge instructions: Weight monitoring	n/a	64%	n/a	n/a
Discharge instructions:	n/a	86%	n/a	n/a

Symptom worsening				
Discharge instructions: f/u	n/a	98%	n/a	n/a

Source: ***US Department of Health & Human Services: http://www.hospitalcompare.hhs.gov/Hospital***
Beginning with discharges in 2004, eligible acute care hospitals could elect to report data.