Rural Healthcare Quality Network

Hospital Peer Alert

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Hospital Peer Review *is a monthly newsletter sponsored by the Rural Healthcare Quality Network to alert Critical Access Hospitals regarding findings from the Peer Review Program. Summarized are a few of the key findings and best practices that would be helpful for other critical access hospitals to be knowledgeable about. This newsletter is edited by Myron Bloom, Medical Director and he can be reached at drmbloom@msn.com.*

"Becoming Bias Aware" because "to Err is Human"

Adapted from: Achieving quality in clinical decision-making: cognitive strategies and detection of bias by Pat Croskerry in Academic Emergency Medicine 2002; 9: 1184-1204.

A bias is simply an inclination to respond in a particular fashion. A thesaurus search of the word "bias" results in "predisposition, preconception, foregone conclusion, favoritism, partiality, prejudice, and unfairness." Over two dozen different iterations of bias in clinical decision making have been described. Being aware of the various biases that may impact clinical decision-making may help to avoid them. Studies have shown the rate of diagnostic error for patients admitted to the hospital from the emergency room to range from less than 1% to as high as 12% (Evaluation of missed diagnoses for patients admitted from the emergency department. Acad Emerg Med. 2001 8:125– 30. and Unnecessary delays in accident and emergency departments: do medical and surgical senior house officers need to vet admissions? J Accid Emerg Med. 1995; 12: 251–4.)

In the emergency room, the first decision is often whether or not immediate action is required (see Chaotic Context, July 2008 Peer Alert Newsletter), followed by forming a differential diagnosis list and narrowing it down to the more probable "working" diagnostic hypotheses and then deciding about which tests are required to confirm or refute the various hypotheses. The first bias to be aware of is called **Triage Queuing,** one type of Expectation bias. Triage queuing results from the initial assessment performed by ancillary staff and may miss, under estimate or over estimate the acuity as well as the diagnosis of the patient's condition.

Expectation bias occurs when the physician's thinking is pre-shaped by expectations of what the physician expects to find: for instance, finding some evidence supporting the consideration of congestive heart failure in a patient who has been noncompliant with diuretics. Expectation bias may be triggered by comments made by others or found in the medical record. Expectation bias leads to pseudo-information which subsequently may prove to be misleading. Any pre-judgment of patients may result in under assessing or over assessing their conditions.

Representativeness is one of the principal methods used in making a diagnosis in which the patient's signs and symptoms are matched against the physician's mental template of different conditions for their representativeness. To make sure that all the critical diagnoses are considered a safety strategy to be employed is called **ROWS or "Rule Out Worst-case Scenario". Representativeness matching error** results in delayed or missed diagnoses when the aspects of the patient's presentation are atypical. The combination of features noted at presentation may result in a **Pattern Recognition** for a specific diagnosis or condition which may be correct, but is vulnerable to **Anchoring bias** or **Confirmation bias.**

Anchoring bias (jumping to conclusions) is a tendency to fixate on a specific feature too early in the diagnostic process based on the information available early in the workup. This initial impression exerts

a powerful effect in which there is a risk of failure to adjust as more information becomes available. Anchoring may lead to premature closure of thinking with an incorrect or incomplete diagnosis, that once attached is difficult to remove (see Diagnosis Momentum). Anchoring can be particularly problematic when combined with Confirmation bias.

Confirmation bias is a tendency to look for confirming evidence to support the hypothesis and ignoring evidence that may refute it. Confirming evidence feels good, whereas non-confirming evidence undermines the hypothesis resulting in the need for more work. Confirmation bias leads to the preservation of a hypothesis or diagnosis that was weak in the first place. The bias may result in a waste of time and effort, or may result in completely missing the correct diagnosis.

Diagnosis Momentum refers to the tendency for a particular diagnosis to become established without adequate evidence. Diagnosis Momentum may begin with the patient or other prior caregivers (Triage queuing, practitioner handoffs) with the diagnosis gathering momentum to the exclusion of alternative diagnoses. Diagnosis Momentum propagates without verification risking delayed or missed diagnoses. Attaching a diagnostic label is a convenient way of communicating; but the wrong label may result in making wrong treatment decisions.

Many problems encountered only require a straightforward approach that efficiently leads to diagnosis and management. Characteristics of **Vertical Line** or **Silo Thinking** (thinking inside the box) are economy and utility. However, inflexibility in the approach to clinical problems may lead to important diagnoses being delayed or missed altogether. Flank pain with hematuria suggests a diagnosis of ureteral colic, but the same signs and symptoms could be due to a dissecting abdominal aneurysm. It is not the ability to recite a long list of differential diagnoses that is important, but the acumen to adapt when the data does not quite fit together. Beware of fatigue because practitioners are more likely to surrender to a constrained linear thinking style when working under conditions of fatigue.

When information is transferred from one person to another, there is a difference in recall which is called **Order of Facts** or **Recency bias**. The information communicated at the beginning and at the end of an exchange is more likely to be attended to while the information in the middle less likely to be remembered. Order of Facts may result in selective points of information being remembered and acted upon while other details are overlooked adversely influencing subsequent decision making.

Posterior Probability Error or **History Repeats Itself** is another frequent bias. If the patient has had several prior visits for a headache diagnosed as migraine, to make the assumption that the next visit is also a migraine risks a posterior probability error. No assumption should be made that a particular diagnosis is present until the evidence justifies it. Posterior probability error bias may result in the wrong diagnosis being perpetuated, or in a new diagnosis being missed.

Law of Averages or **Playing the Odds** bias is based on the fact that many benign conditions overwhelmingly outnumber the serious ones; and more often than not, playing the odds will be a relatively effective strategy. However should the more rare condition be present, the failure to consider it could have disastrous outcome. Playing the odds risks missing the occasional serious condition or crucial decision and is contrary to the ROWS strategy.

Sutton's law is "robbing banks because that is where the money is" and going for the obvious often makes sense. But a KISS (keep it simple sailor) or Sutton's law type error is attempting to diagnose the obvious while failing to look for other possibilities and prematurely calling off the search once something is found (see Search Satisfying). A KISS strategy may often be successful and may avoid costly and time delaying diagnostic testing; however there should be awareness of the pitfalls. When a specific treatment is required for a different diagnosis the result can be disastrous. Sutton's slip may result in misdiagnoses or failure to make additional diagnoses

Search Satisfying or **Keyhole bias** is a tendency to call off the search when something is found. Unfortunately, patients may have more than one diagnosis, especially when the patient has a psychiatric condition. Sometimes finding something may be satisfactory, but not finding everything may be hazardous. For example, significant traumatic injuries rarely occur in isolation so if one fracture is found, the next question should be "is there anything else to be found".

Usually several potential diagnoses will be considered early in a patient encounter. **Premature Closure** occurs when one diagnosis is accepted before being fully verified and stops further investigation.

Omission bias is a tendency toward inaction, or reluctance to intervene (especially for fear of being held responsible for the outcome). While inaction may often be appropriate, omission bias may lead to disastrous outcomes when temporizing in an "urgent" condition results in the development of a worsening "emergent" situation. The opposite is a **Commission bias**.
Commission errors tend to change the course of events because they may involve an intervention, and may therefore be less reversible than an error of omission. The premature adoption of a diagnosis (Premature Closure) is a form of commission error.

Outcome and Value biases refer to the tendency of people to predict a greater likelihood for what they hope will happen rather than what they believe could happen. Allowing personal hopes and desires to enter into clinical decision-making reduces objectivity, and may significantly compromise the process. Clinicians may develop both positive and negative feelings towards patients which may impact the quality of their decision. **Counter-transference** is when the therapist develops feelings towards the patient.

When the physician develops positive counter-transference towards a patient, it may lead to under or over investigation through **Outcome** bias (preferring decisions that lead to good rather than bad outcomes) as well as **Value** bias (the tendency of people to express a stronger likelihood for what they hope will happen rather than what they believe will happen). It may also lead to over investigating for fear of missing something. Both under and over investigating behaviors are seen in hallway consultations and when physicians care for their family members. Developing negative counter-transference typically results in compromised care. For example, once a psychiatric diagnosis has been made co-morbid medical conditions may go undetected (a **Search Satisfying** bias called **Psych out error**).

Overconfidence bias may be a subconscious effort to maintain a positive self image. In general we think we know more than we actually do, often as a result of not having gathered sufficient information. Overconfidence may result in significant errors of both omission and commission resulting in unwarranted interventions, costly delays, or misdiagnoses.

Physicians often use heuristics (philosophy science definition: using or arrived at by a process of trial and error rather than set rules) or tools such as rule-out protocols, as a guide to diagnosing and treating patients. However the use of such tools can be detrimental if the initial diagnostic impression is incorrect. To minimize distressing cognitive dissonance, clinicians may accentuate confirmatory data and ignore the negating data (confirmation bias). Clinicians must recognize confirmation bias as a potential pitfall in medical decision making when using heuristics. Furthermore ruling out a diagnosis does not make the diagnosis of what condition is yet to be ruled in.

Lastly there is **Hindsight bias** which is always a risk in retrospective analysis. When events are viewed in hindsight, there is a tendency to confuse causality with association and apply a deterministic logic that the outcome was thus predetermined to occur. Hindsight bias may distort the opinion about the quality of decision-making and treatment, thereby preventing a realistic appraisal of what actually occurred, and may lead to an inappropriate estimation of the caregivers' ability.

Three recent real examples:
An elderly lady presents to the ER complaining of right hip area pain having fallen several days before, for which she had been seen at her doctor's office and given NSAIDs earlier in the day. In the ER, Negative hip films are found as well as pyuria on UA and a low grade fever of which she was unaware. She is diagnosed as having a UTI and started on a Quinolone. The next day she is back in the ER complaining of lower abdominal pain with some tenderness on the right. The culture had grown >100K so the diagnosis of UTI was confirmed, and she was told to continue the antibiotic. Two days later she is back (3rd trip to the ER) with vomiting and RLQ pain for which CT (and surgery) confirmed an Appendix abscess followed by a lengthy inpatient stay.

A postpartum mom reports to the ER complaining of a migraine (like she has had since the age of 12) that was unresponsive to her Imitrex. A quick problem focused exam finds nothing wrong except a BP of 140/100. She is given parenteral opiates, feels better and goes home. The next day she is back in the ER for the headache that just won't go away [having received Toradol during the day at her physician's office] with a BP that is high again (150/110), as she says always occurs with her Migraines. After parenteral analgesics home again she goes. The next day (3rd trip to the ER) she is back by ambulance seizing, and started on intravenous magnesium and multiple boluses of labetalol. Final outcome: she is fine.

A middle age lady is seen in the ER at 6AM complaining of spending the night with unremitting nausea, vomiting, and sub scapular back pain. Stat WBC is 16K and the US shows a bag full of BBs. Miserable but better after dilaudid, she signs consent and her surgeon adds her to the surgical schedule as a to follow case. Several hours later, immediately after induction her pressure crashes so surgery is aborted. A stat ECG shows inferior STEMI and the initial troponin (run on preop lab draw specimen) was positive, and she wakes to find herself flying to the cath lab where emergent PCI is done followed by a reassuringly low CK washout and good ejection fraction.

Some take home suggestions:

- Carefully listen to the details of patient history but question their self-diagnosis.
- Do not trust the diagnosis made by another practitioner without verification (including change of shift handoffs).
- Bounce Backs get work ups, always starting over, and for bounce backs that bounce back again, consider admission to Observation or close follow up.
- Always employ the ROWS strategy.
- ECGs should be done in adults presenting with anginal equivalent symptoms and repeated periodically (especially with episodes of increased pain).
- One diagnosis does not mean another may not be also present.
- Consider fever in relationship to antipyretics and ability to muster a temp.
- Response to antipyretics and analgesics does not rule out serious pathology.
- Read, consider and address what others have written in the record.
- The record should be complete (and no additional entries allowed) and reviewed by the practitioner before final disposition is made.
- The prevalence of acute serious disease presenting to the ER is significantly higher than that seen in the office because of differences in sampling from the general population; the practitioner who works in both arenas must adjust their index of suspicion and depth of workup accordingly.
- Discharge instructions should be honest to the degree of uncertainty, with a safety focused timely return schedule, and avoid gratuitous or unproven statements of reassurance (say "no evidence/does not appear to be", not "Not fracture/appy").