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Medical Decision Making



Some Basic Thoughts on Making Clinical Decisions

Special points of interest:

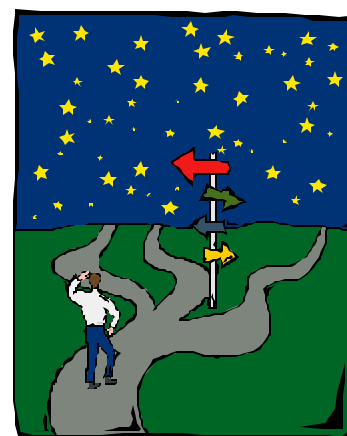
- Having a method for making decisions is helpful for current and future practice.
- A method allows the physician to adjust decisions as new information comes about more easily.
- Every physician is already making decisions. Understanding the process allows us to do it better.

Making a decision is one of the common tasks that physicians do on a daily basis. There is little attention paid to the process and structure of the process of making a decision, however. This lack of attention is important because it is at this juncture in time — which may only take fractions of a second — that critical decisions are made that may affect a patient’s health for years to come.

Not every decision is “life or death” — even for physicians, but every decision has great potential. Some decisions require little thought to make efficiently and “correctly.” Other very important decisions are made with an equal paucity of thought. As doctors we are trained and expected to make decisions without hesitation. [You cannot see 10 patients per hour if you think, after all.]

Unfortunately, as medicine and society become more intertwined, the physician finds himself much like Laocoon being squeezed by multiple serpents at the same time. These competing pressures make the act of decision-making no easy task. One must be able to make a judgment and recommendation about the multiple medications recommended to the elderly patient who has no prescription coverage and a fixed income.

These decisions and other not yet encountered will make the process of making a clinical



Deciding which path to take is a critical point in

decision even more important in the future.

It behooves a physician to consider how she might make a decision and come to an understanding of a process for doing so in a systematic manner. This makes the process more efficient and reliable for the physician as well as the patient.

Needless to say, the process can result in a complaint or legal encounter. A systematic approach to making decisions is better to “defend.”

Inside this issue:

How Do You Make a Decision?	2
How Much Proof	2
Likelihood	2
Treatments	3
Action Threshold	3
Word of Encouragement	3
Bibliography	4

Evidence Based Medicine (EBM)

EBM and its concepts are a critical part of the process of analytical decision making. It is presumed that a basic understanding of EBM is shared by the audience. These terms are most critical for our discussion today:

- Number Needed to Treat (NNT): number of patients one needs to treat to see the desired result.
- Number Needed to Harm (NNH): number of persons that needs to be treated to have a negative outcome (side effect).
- Absolute Risk Reduction (ARR): absolute per-

centage difference in outcomes.

- Relative Risk Reduction (RRR): representation of the difference when compared to the baseline risk. Should not be used alone in making decisions.
- Likelihood Ratio (LR): relationship of sensitivity and specificity that allows a greater interpretation of test results.
- Pre-test Probability: the chance of a disease before any testing is performed.



Decisions should not magically appear as if out of nowhere.

“... the recommendation of another physician — even if they have seen the patient — does not absolve you of legal or ethical responsibility.”



How much is enough to have confidence.

How Do You Make a Decision?

There are many possible ways to make a decision and come to a conclusion. Many of these points do not demand (or deserve) a formal analysis. These decisions can need to be readjusted with the finding of new evidence or the recommendations of a new expert panel. So once a general decision is made its continued validity must be re-evaluated on an ongoing basis.

Many decisions are made based on past experience or teaching. While I am not saying that clinical experience is not very worthwhile (many studies have shown its benefit), “gut feeling” and past experience should not determine every decision that you make — if you want to make good decisions. A clinician must be able to incorporate the current clinical situation with current evidence and patient

expectations and needs. The fact that you just diagnosed a case of pheochromocytoma does not mean that every other patient with new HTN has this disease.

Many physicians dismiss patient concerns about a diagnosis but use the same “logic” in making decisions.

A word must be made about “eminence based medicine” or consult with a colleague. A respected subspecialist can be a wealth of information but should not be relied on to make decisions for **you**. It is not fair to the “curbside consultant,” your patient or yourself. Additionally, the recommendation of another physician — even if they have seen the patient — does not absolve you of legal or ethical responsibility.

How Much Proof/Confidence is Enough?

This is the area where many physicians and patients become “hung up.” There is a tendency to try to obtain absolute certainty — an impossible goal many times — before making any decision. This frame of reference leads to more and more testing in order to move the certainty as close to 100% — even when 90% or even 50% might be just as good.

Medicolegal reasons, patient reluctance and other valid issues might lead to increased testing. It is wasteful and possibly dangerous, however, to take this approach in every situation. The amount of proof will change from situation to situation. One might treat a patient

for bacterial sinusitis with antibiotics with much less certainty than one would treat someone with chemotherapy. In this case the need for more certainty — and therefore more testing is dictated by the potential harm of the therapy.

Physicians must have the knowledge and confidence to go ahead and treat (or not treat) without the definitive diagnosis that is likely not to come easily — if at all. Absolute proof will only delay needed treatments and unleash new problems as a ramification of continued testing.

Likelihood

Although most physicians do not like to discuss likelihood (likely due to its parent Bayesian theory), it is something that physicians use continuously in practice. In doing an E&M encounter with a patient, the list of possible diagnoses is thought about during the act of the H&P and is honed by deciding what tests to order.

Deciding a pre-test likelihood of disease, which is after only history, physical exam and basic tests is a combination of these findings and other relevant information. Disease prevalence is a big component of the decision as is the physician’s personal knowledge. One can-

not reliably predict a disease if there is no understanding of the disease. One suggestion is to read the epidemiology of diseases briefly instead of skipping right to the treatment and diagnostic sections.

The likelihood ratio helps to decide how much power the ordered test will have in aiding your decision.

Treatments

One can look at treatments as a good illustration of how the process of making a decision is carried out.

Every sensible treatment provides benefit to persons who have the disease for which the treatment is intended. Every treatment can cause harm as well — even if the patient has the intended disease.

Because we cannot always know with 100% certainty if a disease is present we can look at a treatment situation in two quantifiable ways:

- How much improvement will the treatment bring to a patient with the disease
- How much harm can the treatment cause to a person without the disease.

One would obviously not treat a patient in

whom we know the disease is not present for they could only stand to be harmed and could derive no improvement.

Benefit represents how much better a patient with disease does accounting for any side-effects.

Two other concepts will be introduced in relation to treatments as well. The first is **utility**, which reflects the relative “goodness” or “badness” of an outcome as expressed by the patient. It reflects the desirability of an outcome. **Impact** is a related measure that does not account for “good” or “bad” but how profoundly an outcome would affect a patient. Both of these terms relate to individual patient and are used in individual decision-making processes.



One needs to continuously read to have current information.

Action Threshold

The action threshold is a property of a treatment for a specific disease. The action threshold is unique for the set of circumstances. The action threshold is also dependent to some extent on the specific situation. For instance, the decision to use NSAIDs for an acute sprain may be different in a 20 year-old compared to a 95 year-old.

The action threshold is a degree of certainty about a disease that above which treatment will cause improvement more than harm. If the certainty is above the action threshold then treatment should be recommended. The

amount of certainty above the action threshold is irrelevant.

If the Action Threshold for treating is 40%, then a certainty of 42% is as good as 90%.

It is helpful for the clinician to have a “handle” on a group of diagnostic and treatment scenarios that come up frequently in practice or which have significant clinical consequences.

The formula for the Action Threshold (in probability form) is:

Action Threshold = Harm/Improvement

"The practice of medicine is an art, not a trade; a calling, not a business; a calling in which your heart will be exercised equally with your head."

Sir William Osler

A Word of Encouragement

A lot of this discussion seems impractical, burdensome and “overkill.” It is an attempt to present an organized structure for a process that each physician does on a daily basis. An understanding of how you make decisions and how decisions may be better made is invaluable.

The process may be cumbersome initially as we are not generally used to breaking down thinking processes into their parts. The process is easier with practice, however, and brings confidence to the practitioner. Better decisions

and better patient care are also consequences.

It must be mentioned again that not all clinical decisions require such an elaborate process. Many clinical decisions are truly “easy” and should not require significant amounts of thought or time. It becomes part of the process to understand what scenarios do not require extensive process and which do. It is also part of the process to continually update with new literature and recommendations.



Remember to screen for hemochromatosis with iron saturation.

Matthew G Schuermann, MD

PO Box 53307
Cincinnati, OH 45253

Phone: 513-325-0398

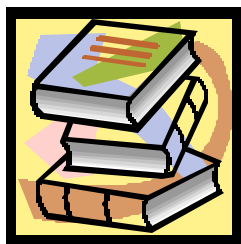
Fax: 1-866-504-8307

Email:

mgs@personalbesthealth.com

*Internal Medicine:
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Here are some suggested readings.

More resources for Decision Making and Evidence-Based Medicine can be found at the practice web site for Personal Best HealthSM, LLC. The URL is www.personalbesthealth.com. More information and toolbox items will be added with time. Suggestions are always welcome.

The practice of medicine is a quickly changing entity. It is traditionally a blend of art and science. As time goes by our scientific knowledge has increased and outstripped the artistic components of medicine. The science has not and cannot replace the art in medicine. The individual relationship with our patients are where the art is still alive. We must be able to understand, interpret and apply the ever-growing body of scientific knowledge, however, or we will be left behind.

Bibliography

- Gross R. Making Medical Decisions. 1999. American College of Physicians.
- Editors. Glossary . ACP Journal Club. 1999; A18.
- Glaziou P, Irwing LM. An evidence based approach to individualizing patient treatment. BMJ. 1995;311:1359-1359.
- Goodman S. Probability at the bedside: the knowing of chances or the chances of knowing? Ann Int Med. 1999;130:604-606
- Gould SJ. The median isn't the message. Narrative Based Medicine. BMJ Press. 29-33.
- Hofer TP, Hayward RA. Are bad outcomes from questionable clinical decisions preventable medical errors? A case of cascade iatrogenesis. Ann Int Med. 2002;137:327-333.
- Kee F. Confidence limits and the limits of confidence. QJ Med. 2000;93:121-124.
- McAlister F. Applying evidence to patient care: from black and white to shades of grey. Ann Int Med. 2003;138:938-939.
- McNaughton J. Anecdote in clinical practice. Narrative Based Medicine. BMJ Press. 203-210.
- Reynolds T. Disease prediction models aim to guide medical decision making. Ann Int Med. 2001;135:637-640.
- Sarasin FP. Decision analysis and the implementation of evidence-based medicine. QJ Med. 1999;92:669-671.
- Schuermann M. Medical Decision Making. Handout for resident retreat, 2001 .
- Sheridan S, Pignone M. Numeracy and the medical student's ability to interpret data. Eff Clin Pract. 2002;5:35-40.