

## STOCK ANSWERS

*for my*

Primary Care Clerkship Evidence-Based Medicine Small Groups  
(INMD 7508, INMD 7509)

Certain questions seem to recur in my small groups. The purpose of this document, which will be perpetually “under construction,” is to provide some stock answers and hopefully contribute to the overall quality of the learning experience.

- 1) *Statistics*. Students are expected to crunch some numbers during this rotation to include in their critically appraised topic (CAT). Some general principles are thus:
  - a) *Don't lose the statistical forest for the trees*. Some papers are full of numbers and obscure statistical tests. Medical students are generally capable of drawing their own conclusions from the former; don't be consumed, intimidated or distressed by the latter.
  - b) *Your study's objectives will dictate the statistical hocus pocus*. Studies come in various flavors. Most students select therapeutic investigations for their projects (e.g., Drug A versus placebo, Drug A versus Drug B, et cetera). Other students pursue diagnostic questions (e.g., the most reliable means to diagnose Condition X). Still other students pursue yet other types of studies (e.g., prognosis, harm). The *type* of study that you select will dictate the statistical tests that you can potentially perform.

For example, in *therapeutic* trials, some standard metrics are relative risk reduction (RRR), absolute risk reduction (ARR) and number needed to treat (NNT). In *diagnostic* trials, the outcomes typically center around sensitivity, specificity and likelihood ratios. *Et cetera*. Stand back and determine the goals of your study in very generic terms; the statistical tests will naturally follow.

- c) *Statistical tutoring*. The *British Medical Journal* (BMJ) has been publishing a series of articles loosely titled “Statistics Notes” since 1994. Each piece is a model for relevance, brevity and extreme readability. A complete bibliography (with links to BMJ's web site) can be found at one of the author's personal web site:

<http://www-users.york.ac.uk/~mb55/pubs/pbstnote.htm>

- 2) *Everyone's a critic.* Students are expected to poke holes in their investigations. Here are some very top-level considerations that can be applied to almost any paper:
  - a) *Baseline characteristics.* Most investigations recruit a bunch of patients and then randomize them to two or more groups to answer some clinical question. It's relatively important to establish that the sub-groups are equivalent in all material respects on the front end of the study before making comparisons on the back end (the whole "comparing apples to apples" thing).

Better papers typically contain a large, mind-numbing table concerning baseline characteristics. Take a few moments to satisfy yourself that (i) the groups are truly equivalent, and (ii) the authors didn't overlook some relevant patient characteristic that should have been considered.

- b) *Final patient disposition.* Most investigations compare sub-groups of patients on the back-end of the study to answer some clinical question. The ability to make valid comparisons depends in large part on maintaining the integrity of the sub-groups during the course of the clinical trial.

Better papers typically present a detailed figure which diagrams the final disposition of every patient involved in the study. Take a few moments to satisfy yourself that the sub-groups remained intact during the clinical trial and were equally affected by drop-outs, deaths, et cetera.

- 3) *Levels of evidence and strength of recommendation.* The confidence that you invest in the outcome of a clinical trial is roughly proportional to the quality of the study's design and its execution. Every study can be graded for quality per the following schema:

[http://www.cebm.net/levels\\_of\\_evidence.asp](http://www.cebm.net/levels_of_evidence.asp)

Your CAT should contain a level of evidence section which supplies a grade for the paper that you selected (with a brief rationale for your assignment).

Many clinical trials permit you to make recommendations concerning the value of certain therapies or diagnostic tests. Again, the confidence that you invest in that recommendation is roughly proportional to the quality of the study which informed your opinion. One strength of recommendation taxonomy is thus:

<http://www.aafp.org/afp/20040201/548.html>

- 4) *Resources*. Some of my favorite aides include:

Centre for Evidence-Based Medicine: <http://www.cebm.net/>

Guyatt G, Rennie D [editors]. *Users' guide to the medical literature: a manual for evidence-based practice*. Chicago: AMA Press, 2001.

McGee S. *Evidence-based physical diagnosis*. Philadelphia: Saunders, 2001 (especially Chapters 1–3).

Sackett DL, et al. *Evidence-based medicine: how to practice and teach EBM* [2nd edition]. Edinburgh: Churchill Livingstone, 2000.

- 5) *When all else fails, just ask*. Medical education is generally less exasperating and more rewarding if you ask questions in moments of uncertainty. Don't hesitate to contact me:

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