



Toward a Cognitive Economy in Medical Education

BY GLENN NORDEHN, DO, AND FREDERIC W. HAFFERTY, PhD

Students have a finite number of hours to learn, but we, as faculty, are not shy about offering them a “curriculum of excess” in which we label virtually every learning opportunity as “basic” and/or “essential.” Backstage, we compound our largeness with endless discussions about what needs to remain sacrosanct (almost everything we teach) versus what could be relegated to the curricular curbside (things taught by the “other guy”). These debates, in our opinion, form a discourse of disconnects as well as a cultural window into how medical school faculty go about constructing learning environments, all too often characterized by internal lacunae rather than by true synthesis and integration.

The authors also find themselves at “identity-odds” in this particular curricular/cultural tension. The lead author (GN) is a faculty member in a clinical department, whereas the second author (FH) represents a unit labeled “basic science.” Although we do quite a bit of co-teaching, we continue to encounter substantial disconnects at our own school in making the clinical more basic and the basic more clinical. What follows (for the most part) is presented in the first person of the lead author.

The Setting

I find myself in a fairly unusual professional position. Although I spent my post-residency years in a full-time internal medicine practice, I now teach at a branch campus of a medical school where only the first two “basic science years” are represented. Thus, the bulk of my faculty time—replete with its curriculum, admissions, and academic affairs responsibilities—is spent working with and around basic science colleagues.

When I began teaching, I thought I would finally come to a better understanding (at least relative to when I was a student) as to why certain material was

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considered “basic” to the clinical practice of medicine, and therefore worth preserving during any of the curricular purgings that periodically make their way through the medical school. And being a clinician, I also thought I might have something to contribute to faculty discussions about how best to link the basic and clinical arms of medical education. I have been wrong on both accounts, and after a decade of full-time teaching, I remain confused as to the “true basics” of basic science education and to how any such “economy of basics” should be calibrated over time.

One thing I am sure of is that we are nowhere close to making the most efficient and economical use of our students’ “brain time.”

As I look across the variety of realignment and integration efforts that have taken place within basic science medical education over the past several years, I believe that these efforts frequently lack a common-denominator approach to curricular accounting. Various academic units are given a specific number of hours to do with what they feel best, and in turn, these units justify what is taught only *within* that unit. Thus, my clinical department decides what needs to be included—and not included—based on the number of hours it is allocated. Basic science departments—biochemistry, for example—do likewise.

Although I admire and respect my bio-

chemistry colleagues, I will use them as an example. Our biochemistry department never has to justify teaching a given topic relative to what is taught by my clinical department. The converse is also true. Thus, the value of biochemistry topics (from a cognitive economy perspective) is weighed only relative to other biochemistry topics. Material remains tagged to a discipline—or if not directly to a discipline, then to a faculty that ultimately is tied to a disciplinary identity.

Thus, and following any period of curricular revision, the best predictor of how many hours a given department will get to teach remains how many hours they used to teach. An often-cited analogy is rearranging the chairs on the Titanic—this time with a few chairs being swept away here and there, but only on a deck-by-deck basis.

This failure to be economical with our students’ cognitive time, to examine the curriculum as an integrated and interdependent whole, and thus to place everything on the table and to assess the relative values of a curriculum’s various elements in producing quality physicians who will care for the public, is causing a problem for our students.

We do not fully embrace a cognitive economy in how we design our curricula.

Cognitive Economy

One possible answer is as an accounting for curricular material based on the concept of a cognitive economy. Think of it as a relative value scale for medical education. Within the world of clinical medicine, physicians are paid according to resource-based relative value units (RBRVUs), with RBRVUs assigned for each physician action. The RBRVU calculations are based on “time and technical expertise for a particular service.”¹

In lieu of presenting a formulary similar to that used in clinical medicine, we

thought we would start at the edges (or tail ends) of our curricular distribution and begin to hack away at these ends, using the principle of cognitive economy (making the best use of students' finite cognitive time). In doing so, we seek to disrupt the present homeostasis, and do so (somewhat painlessly) in the pretend and riskless world of publishing. The present equilibrium (a Nash equilibrium) is maintained because we function in a system where no one (or no department) gains by making the first move unilaterally. As a consequence, no one moves.²

To initiate discussion we offer our own "top 5" lists as a first step. (In the spirit of full disclosure, GN did eliminate some clinical lectures, but admits that none of the hours were his own.)

Eliminate:

1. Pentose phosphate pathway.
2. Log dose-response curves of drugs.
3. Acne.
4. Altitude and diving (effect on respiration).
5. MEN³ syndromes.

Add:

1. Crithothyroidotomy (emergency airway) lecture.
2. Crithothyroidotomy lab.
3. Taking a history using a translator.
4. Pitfalls of the SOAP note.
5. How to write hospital orders.

We welcome other suggestions. ❖

References

1. www.unc.edu/courses/2005spring/nurs/

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2. The equilibrium described follows, in many regards, a Nash equilibrium. In a Nash equilibrium no player can do better unilaterally changing his or her strategy (von Ahn L. Preliminaries of game theory. Retrieved 11/7/08. Retrieval located on http://en.wikipedia.org/wiki/Nash_equilibrium#cite_ref-preliminaries_0-0, accessed 12/8/08). John Nash was the subject of the recent popular movie, "A Beautiful Mind."
3. "Multiple endocrine neoplasia (MEN): a group of rare hereditary disorders of autonomous hyperfunction of more than one endocrine gland." *Dorland's Medical Dictionary for Healthcare Consumers* (www.mercksource.com/pp/us/cns/cns_hl_dorlands_split.jspzQzpgzEzzSzppdocszSzuszSzcommonzSzdorlandzSzdo rlandzSzsixzSz000070637zPzhtm, accessed 12/8/08).