



## Curriculum Design: Finding a Balance

One of the goals of rheumatology training programs is to prepare skilled, independent practitioners. However, the statement of the goal is not sufficient to make it happen. A structured and organized approach to developing a successful curriculum is needed<sup>1</sup>. The medical education literature describes 4 main elements of curriculum development that should be used: (1) curriculum design, which comprises the content and organization; (2) instructional design, which comprises teaching and learning strategies; (3) the assessment of learners; and (4) evaluation of curriculum<sup>2,3</sup>. Curriculum design is the pillar of this framework; the process of setting objectives for learners and of selecting the content to meet those objectives guides the way we teach and creates the benchmarks for evaluation.

Traditionally, curriculum content has been driven by the teachers, who clearly have an interest and a stake in delivering what they feel to be a high quality product. However, medical education has gradually moved into the realm of evidence-driven practice, and it is no longer acceptable to base educational decisions on opinion, intuition, and personal preference<sup>1</sup>. It has been observed that faculty and trainees differ in their perspectives, both on learning objectives and on outcomes<sup>4</sup>. There is also a tendency for teachers (faculty) to overestimate the relevance of their own areas of expertise<sup>5</sup>, and they may underestimate the difficulty of learning content and skills with which they are familiar<sup>6</sup>. This may become an issue with curriculum committees and consensus panels as well. Further, residents, the consumers of curriculum, have become ever more sophisticated and discerning.

The tension between the perspectives of teachers and learners is not the only challenge to curriculum design. The evolution of competency-based, national frameworks, such as CANMeds<sup>7</sup>, and the demands of other centralized licensing bodies has had a huge influence on how learning objectives are created. Appropriate content must somehow be selected from an ever-expanding body of knowledge. Rheumatologists, in particular, are acutely aware of the

challenge of teaching more content, in less time, with fewer faculty.

The article by Ta and Gardner<sup>8</sup> in this issue of *The Journal* suggests one way in which some of these curriculum design issues can be addressed. This group describes how they used clinical data to shape a portion of their curriculum for rheumatology trainees. They collected data over 10 years regarding the kinds of clinical problems encountered by their academic rheumatology consultation service at a large tertiary-care university hospital. The data were used to determine which diseases most commonly required consultation and they examined trends in these consultations over time. They used these trends to determine which clinical problems had the greatest educational relevance, and used this information to design a “kick-start” curriculum for new trainees in the rheumatology program.

The intrinsically appealing aspect of this approach is that it achieves the aim of “authentic relevance”<sup>9</sup>, which describes content that is based on the immediate and real needs of learners to succeed in the real world of work<sup>9</sup>. This practice-survey-based, real-world approach has been employed by family practice educators<sup>10,11</sup> and has been recommended by others<sup>9</sup>. Ta and Gardner applied it to a large inpatient service, and collected data over an extended period of time (their 10-year data were actually drawn from a sustained collection of data on consultations over a 20-year period), which allowed them to discover which clinical topics had enduring educational value.

Ta and Gardner have not yet published their results of the evaluation of this project (but they are anticipated with interest!). However, it is already clear that there are many theoretical benefits to all the stakeholders.

With respect to the learner/teacher pair, the benefit of a relevant curriculum is self-evident. Resident learning will be centered around the clinical material that is likely to be at hand, and educational experts observe that information retrieval in a future clinical situation is most successful if the information learning took place under similar conditions

---

See Evaluation of the activity of an academic rheumatology consult service over 10 years, page 563

(i.e., at the bedside rather than in a lecture format)<sup>12,13</sup>. With limited time and faculty available for teaching, emphasis should be placed on what is most relevant. Ta and Gardner reorganized the curriculum for their trainees based on their data. Timing of topics was changed, and teaching efforts were weighted toward situations the residents would be most likely to encounter. It is reasonable to expect with a system in place for data collection, this curriculum has the potential to remain dynamic and to respond to a changing clinical base, as long as the data are reanalyzed at regular intervals.

Patients benefit when residents are confident and knowledgeable about the clinical problem at hand. Diagnostic and therapeutic decision-making should be more streamlined when residents and faculty have been learning around these issues in a structured way. A rheumatology service might also be able to tailor teaching of a skill set to projected need.

The data-based curriculum may also highlight important opportunities to engage specialist-to-nonspecialist teaching on topics that repeatedly generate consultations. Effectiveness of patient care can be improved if primary services become comfortable managing certain problems themselves.

It is interesting to note in the study of Ta and Gardner that the spectrum of clinical problems seen at their university hospital was quite different from that seen at their affiliated veterans' hospital when data from the 2 sites were compared<sup>8</sup>. Moreover, at both sites the breadth of clinical topics selected for the curriculum was not comprehensive. These are not surprising findings, but they do highlight the potential shortcomings of a purely data-driven curriculum. It is precisely for these reasons that many leaders in education are advocating the development of national, unified curricula. The rationale behind such an approach is that it will lead to creation of greater uniformity of content to ensure that trainees have the capacity to work successfully in any setting. The price to be paid for this is the loss of attention to local culture, needs, and resources<sup>14,15</sup>.

The practice of medicine, the academic climate, and education theory are all evolving together. A new paradigm calls for national curricula to ensure that educational outcomes are consistent and that trainees meet licensing standards.

Ta and Gardner remind us that there is a lot to learn from the local clinical profile when curriculum planners sit down to determine curriculum content. It is likely (and right) that the ideal curriculum will combine the best of both approaches into a whole that will benefit teachers, learners, patients, and the institutions where care is provided.

**LORI J. ALBERT, MD,**  
Division of Rheumatology,  
Department of Medicine,  
University Health Network,  
Toronto Western Hospital,  
399 Bathurst Street, 1E-424,  
Toronto, Ontario M5T 2S8, Canada

*Address reprint requests to Dr. Albert. E-mail: lori.albert@uhn.on.ca*

## REFERENCES

1. Wong AK. Curriculum development in anesthesia: basic theoretical principles. *Can J Anesth* 2006;53:950-60.
2. Prideaux D. ABC of learning and teaching in medicine. *Curriculum design*. *BMJ* 2003;326:268-70.
3. Oliva PF. *Developing the curriculum*. 6th ed. Boston: Pearson Education Inc.; 2005.
4. Morcke AM, Wichmann-Hansen G, Nielsen DG, Eika B. Complex perspectives on learning objectives: stakeholders' beliefs about core objectives based on focus group interviews. *Med Educ* 2006;40:675-81.
5. Koens F, Custers EJ, ten Cate OT. Clinical and basic science teachers' opinions about the required depth of biomedical knowledge for medical students. *Med Teach* 2006;28:234-8.
6. Bransford JD, Brown AL, Cocking RR, editors. *How people learn: Brain, mind, experience and school*. Washington, DC: National Academy Press; 2000.
7. Frank JR, editor. *The CanMEDS 2005 physician competency framework. Better standards. Better physicians. Better care*. Ottawa: The Royal College of Physicians and Surgeons of Canada; 2005.
8. Ta K, Gardner GC. Evaluation of the activity of an academic rheumatology consult service over 10 years: Using data to shape curriculum. *J Rheumatol* 2007;34:563-6.
9. D'Eon M, Crawford R. The elusive content of the medical-school curriculum: a method to the madness. *Med Teach* 2005;27:699-703.
10. Rosenblatt RA, Cherkin DC, Schneeweiss R, et al. The structure and content of family practice: current status and future trends. *J Fam Pract* 1982;14:681-72.
11. Kahl LE. Musculoskeletal problems in the family practice setting: guidelines for curriculum design. *J Rheumatol* 1987;14:811-4.
12. Regehr G, Norman GR. Issues in cognitive psychology: implications for professional education. *Acad Med* 1996; 71:988-1001.
13. Willingham DT. *Cognition: The thinking animal*. 2nd ed. Upper Saddle River, NJ: Pearson Prentice Hall; 2004.
14. Ury WA, Reznich CB, Weber CM. A needs assessment for a palliative care curriculum. *J Pain Symptom Manage* 2000; 20:408-16.
15. Ury WA, Arnold RM, Tulsy JA. Palliative care curriculum development: A model for a content and process-based approach. *J Palliat Med* 2002;5:539-48.