

Heuristics in education and clinical practice in urology

Heuristics describes the process of proceeding by trial and error, rather than according to a planned route. It is also defined as the art and science of discovery and invention. The word comes from the same Greek root as "eureka": εὕρηκα, which means "I find". The term was introduced by Pappus of Alexandria in the 4th century.

The traditional paradigm of clinical medical diagnosis was heuristic. In this model, an experienced clinician, his mind packed with a lifetime of learning and knowledge, would evaluate a patient, mentally incorporate all the available information, and using his best judgement, arrive at a diagnosis and treatment recommendation. The strength of this was the wise physician's ability to make nuanced decisions, often based on intangible features of the case; the weakness was lack of reproducibility, vulnerability to bias, variance with evidence based medicine, and a perception of paternalism.

The same approach characterised medical education, which had a major component of apprenticeship. Students would be offered a grounding in basic science, and then accompany clinicians on the ward and in clinics and operating rooms, endeavouring to acquire the knowledge and judgement of their teachers.

This model has increasingly been abandoned for the non-heuristic approach. This uses evidence based treatment guidelines, algorithms, care paths, and other systemized models to reduce bias, incorporate evidence, and enhance the transparency and objectivity of decision making.

Two articles in this journal address different facets of this. The article by Gagliardi et al used consensus development ('a modified Delphi approach') to derive indicators of the quality of the outcome of radical prostatectomy across surgeons, hospitals, and large regions. The conclusions are interesting, in part because the process identified a disparity between a formal evidence based approach, and expert opinion. One outcome measure, for example, the proportion of men over 75 with low risk cancer undergoing radical prostatectomy, is described as not being supported by published evidence; nonetheless, the consensus panel viewed this (appropriately, in my opinion) as an important indicator of the quality of clinical judgment.

This represents an important initiative. In virtually all clinical areas where it has been evaluated, the outcome of surgery is a function of volume of cases. Proving this is easier for operations like Whipple procedures or coronary artery bypass, where mortality rates are a meaningful endpoint. For most operations in urology, other discriminators are required. Tools such as the one developed by Gagliardi et al will make it possible to evaluate outcome using measures by surgeon, hospital, and region, based on quantitation of subtle differences. How this information is used is another story; but, much like the famous Hawthorne Rubber Company (where the first efficiency study was carried out), merely knowing the information is being collected and analyzed may very well result in improved performance (the Hawthorne effect).

The second article, by Rapp et al, describes a core learning objectives model which similarly systematizes the teaching of 'core' concepts in urology to clinical clerks. The initiative is laudable, and the article should be read by clerkship program directors, and anyone involved in clerkship teaching. The authors don't, however, define the objectives of the clerkship. Arguably, the 'core concepts' can be derived from reading an introductory text book of urology, and attending seminars on key subjects. From that perspective, the function of the clinical experience is to give students a taste of the specialty, and an exposure to a selection of patients, without attempting to be comprehensive. A more 'heuristic' approach, in other words.

We'd be pleased to hear from you on either of these controversial subjects.

Laurence H. Klotz
Editor-in-Chief