

Hot Topic Symposium: Diagnostic Error – Understanding it and reducing it

A symposium held on 14 September 2011 at South Hall Complex, Pollock Halls, University of Edinburgh

UNDERSTANDING DIAGNOSTIC ERROR — WHY IS IT IMPORTANT?

Dr Mark Graber, Senior Scientist, RTI International and Professor Emeritus of Medicine, State University of New York, USA

Diagnostic error is the 'new kid on the block' in the efforts to improve patient safety. In this presentation we will review the available estimates on the incidence of diagnostic error, discuss why these errors are so important, and explore the aetiology of diagnostic error using root cause analysis.

THINKING AND DIAGNOSTIC ERROR

Professor P Crosskerry, Clinical Consultant in Patient Safety and Professor in Emergency Medicine, Dalhousie University, Nova Scotia, Canada

The process of making a diagnosis involves several elements that include the interpretation of symptoms and signs, generation of hypotheses, ordering of appropriate laboratory tests and diagnostic imaging, and their interpretation and integration into a coherent, valid conclusion through decision making.

The fundamental component of diagnosing is cognition – how the diagnostician feels and thinks ultimately determines the quality and calibration of decision making. Therefore, it is extremely important that we understand how everyday thinking and feeling processes work.

Current models of thinking include both conscious and unconscious modes. Conscious thinking is analytical, deliberate, rational, and for the most part reliable. However, much of our everyday thinking is unconscious, autonomous, or intuitive and may lead us into error. A variety of cognitive and affective biases have been described that are known to influence and distort thinking in the intuitive mode.

The more insight and understanding we have into how we think and feel, and particularly how biases operate and influence our thoughts and feelings, the more likely we are to make well-calibrated and accurate diagnoses.

CLINICAL JUDGEMENT

Dr Kathryn Montgomery, Julia & David Uihlein Professor of Medical Humanities and Bioethics & Professor of Medicine, Northwestern University, Feinberg School of Medicine, Chicago, Illinois, USA

Beyond the interest in cognitive processes that result in diagnostic error lies a mindset that makes those errors more likely. This is the off-handed assumption that medicine is a science. It is not, at least not in the nineteenth-century, positivist, Newtonian sense that informs our commonsense understanding of science. Nor, except metaphorically, is medicine an art. It is instead a practice, the care of sick people, and practical reasoning – Aristotle's *phronesis* – is required for decisions about diagnosis, prognosis, and treatment. This analogical, case-based reasoning more closely resembles the narrative method of Sherlock Holmes than the way we believe scientists reason. Recognition of medicine's characteristic rationality leads to a reexamination of both medical education and attitudes to clinical practice that will more readily take cognitive error into account.

EXPERIENCE OF REDUCING DIAGNOSTIC ERROR

Dr Mark Graber, Senior Scientist, RTI International and Professor Emeritus of Medicine, State University of New York, USA

To reduce the harm associated with diagnostic error, new strategies are needed that focus on providers, patients, and healthcare organizations. Interventions to reduce the likelihood of cognitive, and system-related errors will be explored, and the potential role of decision support resources.

MAKING DIAGNOSIS EASIER AND MORE RELIABLE

Dr Brian Robson, Medical Director, Healthcare Improvement Scotland

Why, in the 21st century, do we still rely on the tools and techniques of the 18th century or earlier when it comes to application of knowledge, systems of care and

diagnostic accuracy? Would your pilot land your plane without instrument guidance, the weather forecaster stick his finger in the air, or your financial analyst rely on her memory of how the stock market was performing? We will explore what this means for our patients and our professionals and will be encouraged to 'THINK' and 'BE CURIOUS' about the concept of reliability, the role of technology and how transformative this will be for the healthcare of the future.

FURTHER WAYS TO AVOID DIAGNOSTIC ERROR

Professor P Crosskerry, Clinical Consultant in Patient Safety and Professor in Emergency Medicine, Dalhousie University, Nova Scotia, Canada

Dr GR Nimmo, Consultant Physician in Intensive Care Medicine, Western General Hospital, Edinburgh, UK

Given that much of diagnostic failure results from thinking failure, we should first identify the reasons why thinking failures occur. Many people simply do not understand the process of thinking, so the first goal might be a requirement in the undergraduate curriculum for a course on decision-making that describes the overall process, the elements of critical thinking, the two main modes of thinking (intuitive and analytical), and what a well-calibrated decision maker looks like. The second might be a review of the major cognitive and affective sources of bias, and their impact primarily on the intuitive mode of thinking. The third would be a review of the principal ambient factors known to cause failure (interruptions, distractions, cognitive overloading, fatigue, sleep deprivation, sleep debt, burnout syndrome), and a fourth the sources of individual variation in decision-making (gender, age, personality and others).

The next steps would be finding appropriate solutions to avoid failure. This is a tall order. Diagnostic reasoning is mostly an invisible process – we infer failure usually after the fact. We can, however, interpolate plausible explanations, as well as combining what we know from the psychology literature. These all suggest a primary goal should be the development of a variety of educational initiatives aimed at teaching about decision-making specifically, advancing critical thinking and educating intuition – all strongly embedded in the clinical context of patient safety. Additional strategies such as checklists, forcing functions, algorithms, information technology and clinical decision support all require further research and development.