“The intersection between scientific models, biological plausibility and evidence-based medicine: anatomy and dissection of a large-scale medical literature error”

Abstract:

In 2010, colleagues and I noticed an implausible interpretation in two prominently published systematic review articles in one particular area of medicine. The authors had overlooked an important pharmacologically active component and made conclusions without accounting for this. We reinvestigated this issue in our own systematic review. We looked at three different applications of a particular treatment and found that the “forgotten” component was crucial to achieving significance in meta-analyses. Misinterpretation of evidence was common and affected 29-43% (overall 35%) of original articles and systematic reviews. Ambiguous interpretation and missing information posed additional problems. Unsubstantiated recommendations on the basis of incorrect interpretation were found in prominent clinical practice recommendations and evidence-based guidelines. On the other hand, this treatment has been the subject of many decades of laboratory-based research. Our interpretation is that clinical trial reports, systematic reviews and evidence-based guidelines overlooked the principle of biological plausibility as well as relevant background literature while making their conclusions. Here, I will compare and contrast the “classical” approach via scientific models with that of evidence-based medicine and will make the case that checking for biological plausibility should become part of formal evidence assessments.

Biography:

Matthias Maiwald is a Consultant in Microbiology at KK Women’s and Children’s Hospital in Singapore, and an Adjunct Associate Professor at the Department of Microbiology, National University of Singapore, and at Duke-NUS Graduate Medical School. He previously worked at the University of Heidelberg, Germany, then at Stanford University, USA, and subsequently at Flinders University in Adelaide, Australia, before moving to his current position in Singapore. He has two main areas of research interest, one is the molecular detection and characterization of fastidious emerging pathogens, the other is infection control, with an emphasis on hand hygiene, skin antisepsis and the prevention of surgical site infections.

All are welcome to attend. No RSVP is required. Lunch will be served from 12.00pm onwards, outside the amphitheatre.