F9 Developing the Evidence Base for Forensic Science – The Systematic Review

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After attending this presentation attendees will: (1) understand the nature of evidence hierarchy; (2) understand the principles of systematic reviews; (3) be able to assess a forrest plot; and, (4) be aware of the need for protocol development in reviews.

This presentation will impact the forensic science community by beginning the process of defining topics for systematic review in the forensic sciences to develop a robust research base.

With a rapidly expanding number of journals and publications it is becoming impossible for health care professionals to assimilate new research findings, assess their value and determine if their conclusions should impact on clinical care and practice. In response to this, literature reviews have always been popular methods of presenting summary findings to readers; however, narrative reviews are prone to bias and often reflect the opinions and philosophies of the authors. Out of this concern was developed the systematic review – a review with a robust protocol, inclusion and exclusion criteria for publications, and a statistical approach to meta analysis of results. Leading the field in systematic reviews is the Cochrane Collaboration, an international network which assesses the impact of randomized clinical trials on patient care.

Forensic science, and its application within judicial systems, can have a significant impact on the lives of those it touches and therefore should be held to no lesser a level of scientific scrutiny than medical interventions and therapies. The National Academy of Sciences Report has clearly identified concerns over the quality of research in forensic science and there is a need to take a systematic approach to define the literature, consider meta analyses of findings, and report recommendations. Cochrane reviews have changed the way medicine is practiced and a similar approach to forensic science seems timely.

While peer reviewed scientific evidence in the form of research publications can easily be rated using Sackett's hierarchy of evidence (with systematic reviews being considered the highest level) forensic science is executed in two arenas – the peer reviewed journals and the judicial system. The opinions, judgments, and reviews that are conducted within the court system cannot be ignored nor can any positive or negative outcomes produced as a result of using a particular forensic science be ignored. One would not adopt a medical intervention that worked in the laboratory but that killed patients in the operating theatre.

Forensic science is rarely appropriate for testing using randomized controlled trials. As such, the Cochrane methodology is inappropriate. However, a sister organization, the Campbell Collaboration offers a review framework that is ideally suited to assessing forensic sciences and providing guidance, recommendations, and future research paradigms that will help strengthen the individual disciplines.

Part of a robust systematic review is the development of a protocol. In this presentation the nature of systematic reviews will be described along with their impact in the medical space and how homogenous evidence is combined in meta analyses. The protocol for a systematic review of bitemark evidence will be presented demonstrating the search protocol, the inclusion and exclusion criteria and the literature areas to be covered. Forensic science needs to meet the highest level of scientific evidence and the development of a suite of systematic reviews, with robust and agreed protocols, is one such way of achieving this.

Odontology, Review, Systematic

