

Title: Developing training and opportunities for students in systematic reviews

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What problem was addressed?

Systematic reviews are a key component of evidence-based healthcare. Being able to conduct a systematic review is a core skill for clinical researchers[1] and the ability to find and appraise evidence is important for all clinicians. While elements of the systematic review process are often included in medical school curricula, we believe that there is scope for additional bespoke training.

What was tried?

In 2018 we developed a course to provide medical students in their final three years with training in systematic review methods and opportunities to apply that training through contributing to reviews.

In the first year, the training consisted of four one-hour interactive lectures in the early evenings working through the key stages of a systematic review using a single chosen published review as an example. Based on student evaluation, we adapted the course in the second year to three one-hour lectures and three 1.5-hour paired practical sessions. In response to the COVID-19 pandemic, in the third year, we adapted the course for online delivery. For this we ran six one-hour sessions over

three weeks, each combining both theory-based and small group practical elements and making use of cloud-based software to facilitate group work.

To provide opportunities for students to learn by contributing to a review, we invited researchers from across the biomedical campus to submit projects. Students were invited to rank the projects which were then allocated based on their preferences.

What lessons were learned?

Enthusiasm for the course was greater than we had anticipated. Across the three years 231 from a potential pool of 812 medical students attended the training. Post-course evaluation was consistently positive with >90% of students agreeing that objectives were met, the sessions were worthwhile and that they would recommend the training to other students. Mean confidence in ability to perform a systematic review increased on a 5 point Likert scale from 2.15 (SD 1.20) to 3.91 (SD 0.68) ($p < 0.0001$). 177 students expressed an interest in contributing to a review and 143 were successfully matched with researchers. At least 25 students have been co-authors on peer reviewed publications so far and all those who completed projects in the first two years would recommend getting involved in a systematic review to other students.

This experience demonstrates that our approach is scalable, can be delivered remotely and is effective at providing medical students with the knowledge, skills and real-world experience of an important research method. We also learned the importance of practical hands-on training in systematic review methods and the benefit of integrating this with the more theoretical aspects. One challenge we experienced in the first year was balancing the expectations of the students and researchers in relation to co-authorship on publications. This was solved by including clarification for researchers that the expectation was that students would be offered co-authorship if they met the

ICMJE criteria. We think this approach could serve as a model for other medical schools to develop similar initiatives.

Reference

- [1] Lund H, Brunnhuber K, Juhl C, Robinson K, Leenaars M, Dorch BF, et al. Towards evidence based research. *BMJ* 2016;355:1–5. <https://doi.org/10.1136/bmj.i5440>.

Ethical considerations

When we started the course we did so for the benefit of the students. We did not foresee that we would be in this position when we would be wanting to share our experience with others. As a result, we did not apply for formal ethical approval to collect feedback from the students. We did, however, adhere to the standards of the Declaration of Helsinki. Specifically, feedback was voluntary and anonymous and obtained at the end of the sessions using the same system that is used for routine course evaluation within the institution. All students were aware this was a new course and that the feedback would be used to improve and build on the course for future medical students. No incentives were given for completing the feedback and it is not possible to identify any individual students from their responses or the data included in this article.

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