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Promoting medical student engagement with antimicrobial stewardship through involvement in undergraduate research

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Abstract

The National Health Service recognises the importance of research, teaching, and training to the future success of the organisation and medical students are expected to qualify with the necessary clinical, professional, and academic skills to support this. There is a wide variation in the level of cross-specialty engagement with Antimicrobial Stewardship (AMS) & Antimicrobial resistance (AMR) research at UK and international state-of-the-art conferences, with a heterogeneous level of importance also attributed amongst undergraduate and postgraduate training pathways across clinical medicine. It therefore seems apparent that the AMS-AMR agenda needs to be promoted from within specialties, rather than being 'pushed' on them as an external agenda, to promote broad ownership and capacity within all clinical specialties that use antimicrobials. This must start early during undergraduate medical training. We investigated whether the use of an online platform designed to facilitate medical student research projects could be utilised to promote undergraduate engagement with AMS-AMR at Imperial College School of Medicine between July 2015 and 2016. During this period 12 applicants were appointed to 11 of the 13 advertised projects. So far, students undertaking these projects have achieved: 1 peer-reviewed publication, 3 national oral presentations, 1 national prize, 1 international poster presentation, 3 national poster presentations, and 2 further manuscripts are currently under peer-review. Furthermore, despite the students' broad career interests there has been a high retention rate with students requesting involvement in further AMS-AMR related activities. Further longitudinal assessment of this tool for promoting undergraduate engagement with AMS-AMR research is now being explored.

Dear Editor,

We agree with the recent report in this Journal from Nand and colleagues that education is a key factor in curbing antimicrobial resistance (AMR).¹ AMR is a leading patient health and safety issue that requires engagement at all levels of society. Although there is commitment from clinicians practicing infection-related specialties towards research in AMR and antimicrobial stewardship (AMS), there is a wide variation in the level of cross-specialty engagement with AMS-AMR research at UK and international state-of-the-art conferences, with many specialties who are responsible for high rates of antimicrobial usage and AMR engaging very little with AMS-AMR research output.² This lack of engagement with AMS-AMR is not only observed at the level of conferences, with a heterogeneous level of importance also attributed amongst undergraduate and postgraduate training pathways across clinical medicine.^{3,4} It therefore seems apparent that the AMS-AMR agenda needs to be promoted from within specialties, rather than being 'pushed' on them as an external agenda, to promote broad ownership and capacity within all clinical specialties that use antimicrobials. Furthermore, this must start early – including during undergraduate medical training. How this engagement with clinicians in training should be achieved however, is less clear.

The National Health Service recognises the importance of research, teaching, and training to the future success of the organisation.⁵ This is supported by the General Medical Council (GMC) in their outline paper, *Tomorrow's Doctors*.⁶ Medical students are expected to qualify with the necessary clinical, professional, and academic skills.⁶ Whilst undergraduate curricula are now adapting to support students in achieving these goals, the majority of undergraduate student research and teaching experience is developed in the extra-curricular setting. This poses several challenges for both the student and supporting organisations and means that uptake can often be varied. With a need for new and enticing methods for

engaging a wide range of undergraduates in AMS-AMR, we investigated whether the use of an online platform designed to facilitate medical student research projects could be utilised to promote undergraduate engagement with AMS-AMR at Imperial College School of Medicine between July 2015 and July 2016.

At Imperial College London there are an abundance of clinical research opportunities in the field of AMS-AMR, magnified by the College's partnership with Imperial College Healthcare NHS Trust as part of the Academic Health Science Centre (AHSC). To permit the effective facilitation of extracurricular undergraduate research we utilised a new on-line platform (www.ProjectPal.org), which allows students looking for projects to identify available supervisors.⁷ This online resource allows documentation of ongoing research projects within the College and Trust and can also be used to collect feedback on outputs from individual projects.

Over the year, researchers from the Health Protection Research Unit for Healthcare Associated Infections and Antimicrobial Resistance advertised 13 standalone AMS-AMR related research projects on the website. These attracted a total of 21 applications from medical students within Imperial College School of Medicine, a process which involved submission of a short cover letter, curriculum vitae, and statement of intent from undergraduate students. These applications led to the appointment of 12 (57%) applicants to 11 (85%) of the 13 projects. So far, three of these projects are currently reported by supervisors as being fully completed whilst the rest are in progress. The following outcomes have been achieved: 1 peer-reviewed publication, 3 national oral presentations, 1 national prize, 1 international poster presentation, 3 national poster presentations, and 2 further manuscripts are currently under peer-review. Furthermore, academic supervisors report that despite their students' broad career interests, many beyond the scope of infections training,

there has been a high retention rate with students requesting involvement in further AMS-AMR related activities.

In conclusion, for the undergraduate student, engagement in research promotes learning and the development of new behaviours and skillsets. In turn, this not only generates high calibre academic achievements, but importantly enhances awareness and engagement with AMS-AMR at the early stages of undergraduate training. We are now planning further longitudinal investigation of this online platform for promoting undergraduate engagement in AMS-AMR, particularly with a view how the AMS-AMR is propagated as trainees' progress through their diverse career pathways.

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Contribution statement

All authors contributed significantly towards the planning this study and production on this manuscript.

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Competing interests

AHH & LSPM have consulted for bioMérieux in 2013 and 2014 respectively. All other authors have no conflicts of interest to declare.

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Highlights

- We investigated an online platform to facilitate undergraduate engagement with AMS research
- Over a 1 year period 12/21 (57%) applicants were appointed to 11/13 (85%) AMS-AMR related projects
- So far over the year analysed the students achieved 1 publication, 7 presentations, and 1 national prize
- Despite broad career interests student retention rates have been high for future AMS projects.