

# Effect of a national focused course on academic medicine for UK candidates applying for a Clinical Academic Programme

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## Abstract

**Background** Academic medicine is crucial for healthcare advancement. However, recruitment of junior doctors into academia remains an area of concern globally. In the UK, a national integrated clinical academic pathway was developed to address these issues, with the Academic Foundation Programme as the ‘first opportunity for research’. We aimed to evaluate whether a focused course on academic medicine could enhance knowledge, confidence and preparedness of candidates wishing to apply for an academic programme.

**Methods** UK medical students attended a national course conducted by current UK Academic Foundation Programme doctors that comprised lectures on academic medicine and various aspects of the Academic Foundation Programme. An online questionnaire-based cross-sectional study was conducted with participants rating measures including knowledge, preparedness and confidence related to Academic Foundation Programme applications. Outcomes were measured using Likert scales (1=low; 5=high).

**Results** In total, 103 out of 155 attendees from 11 different UK medical schools responded to the survey (66% response rate). Pre and post-course data showed increase in participants’ knowledge (median score 2 vs 4,  $p < 0.0001$ ), understanding of the application process (median score 2 vs 4,  $p < 0.0001$ ), confidence (median score 2 vs 4,  $p < 0.0001$ ) and preparedness (median score 2 vs 4,  $p < 0.0001$ ) in applying for the Academic Foundation Programme.

**Conclusion** To our knowledge this is the first study in the available literature that demonstrates a focused course on academic medicine may enhance UK medical students’ knowledge, confidence and preparedness in applying for a clinical academic programme. Further research will ascertain whether such courses can augment trainee numbers undertaking and remaining within academic medicine.

**Keywords** academic foundation programme, academic medicine, medical education

**Declaration of interests** No conflict of interests declared

## Introduction

Academic medicine is pursued by doctors who engage in scholarly activities.<sup>1</sup> It is crucial for healthcare advancement with responsibilities in research, teaching and management.<sup>2</sup> Additionally, clinicians have a duty to remain up to date and must be proficient in critically appraising research data.<sup>3</sup> This is especially prudent in an era of (perceived) rising scientific misconduct with high profile cases posing a great threat to patient safety.<sup>4</sup> Despite the importance of academic medicine, recruitment of junior doctors into academia remains an area of concern globally, with trainees often not appreciating its importance.<sup>5–13</sup> Cited concerns include lack of exposure,

lack of a transparent career structure as well as inflexibility in academic/clinic work balance.<sup>1</sup> An established issue for academic clinicians who are required to split their time between clinical and academic responsibilities is that they are judged against the standard of their full-time colleagues in both university and hospital settings.<sup>14</sup> This can be especially problematic in craft specialties, where it can be challenging to remain up to date, while developing novel procedural skills and undertaking appropriate numbers of index operations/procedures to remain competent and confident.<sup>14</sup>

In the UK, clinical academics make up only 6% of the medical workforce and numbers are declining.<sup>15</sup> Furthermore, there

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are fewer young doctors entering academic medicine. Sixty-three percent of the academic clinician workforce is now aged over 46 compared with 53% in 2004.<sup>16</sup> This is an international problem, with the USA and Europe also facing similar issues.<sup>16</sup> Furthermore during medical school, underrepresented ethnic minority medical students lose interest in academic medical careers as well as during postgraduate training.<sup>17</sup> Women are also under-represented both in holding posts with academic content and in aspirations to do so.<sup>18</sup>

The National Institute of Health Research integrated clinical academic pathway was developed in the UK to address these issues and three key concerns in particular: (i) lack of transparency of career structure and a well-defined route of entry; (ii) inflexibility in clinical/academic training balance and (iii) scarcity of structured posts on training completion.<sup>1</sup> The Academic Foundation Programme (AFP) was developed as the 'first opportunity for research' in which newly qualified doctors would be allowed to spend four months undertaking a research/teaching post during a two year clinical rotation, learning research skills and contributing to a high quality research project. Approximately 500 posts are offered nationally each year with a variety of programmes offered depending on the deanery. This represents just over 5% of all UK Foundation Programme places. The number of vacancies is similar at the various academic units of application. London has substantially more slots as the London foundation schools combine their vacancies with one combined application process. The AFP can be followed by an academic clinical fellowship during specialist training, with 25% of time dedicated to research with the ultimate aim of undertaking a research doctorate (PhD or MD).<sup>1</sup>

Conferences can aid educational scholarship, networking, collaboration, and information sharing; they represent attractive venues for early exposure to the culture of medical academia.<sup>19</sup> However, research on whether such conferences/courses can facilitate trainees' confidence and preparedness for clinical academic programmes is scarce. The aim of this study was to evaluate whether a national focused course specifically on academic medicine could enhance knowledge, confidence and preparedness of UK medical students wishing to apply for the AFP.

## Methods

We organised and arranged a free two-day national course from 19–20 September 2015 for UK medical students, which was sponsored by the British Medical Association. The aim was both to encourage students to consider a clinical academic career, and to support potential applicants to the AFP. The course consisted of a series of lectures/workshops on various aspects of the AFP and were conducted by doctors currently on the AFP (day 1) with mock interviews (day 2) (Table 1). Lectures covered topics such as approach to clinical cases, medical ethics, critical appraisal and the online application process. Mock interviews consisted of a discussion of a clinical case and critical appraisal of an abstract. The project was considered an evaluation of a teaching method and did not require ethical approval.

A cross-sectional study design was employed. Pre and post-

course data were collected from course participants by use of an online questionnaire asking participants to rate factors (knowledge, preparedness, confidence, and understanding of the application process) related to applying to the AFP. Outcomes were measured using validated Likert scale-based ordinal response data (1=low; 5=high). The questionnaire also included questions on other aspects of the course (e.g. how useful participants found the course, how well they thought the course was organised etc), and responses were collated.

Non-parametric Wilcoxon matched-pairs rank sum tests (one-tailed) were performed to analyse the data, comparing pre- and post-course measures. All statistical analyses were carried out using SPSS (version 22.0; SPSS Inc, Chicago, IL) and  $p < 0.05$  was considered significant.

## Results

In total, 155 medical students attended the course and 103 students from 11 different UK medical schools responded to the online questionnaire (66% response rate). The data demonstrated an increase in participants' knowledge (median score 2 [interquartile range (IQR) 2–3] vs 4 [IQR 4–5],  $p < 0.0001$ , CI 2.000–2.000), understanding of the application process (median score 2 [IQR 1–3] vs 4 [IQR 4–5],  $p < 0.0001$ , CI 2.000–2.000), confidence (median score 2 [IQR 2–3] vs 4 [IQR 4–5],  $p < 0.0001$ , CI 2.000–2.000) and preparedness (median score 2 vs 4,  $p < 0.0001$ , CI 2.000–2.000) in applying for the AFP.

The usefulness of the course for increasing awareness of a UK clinical academic programme, as well as encouraging candidates to apply, was rated at a median score of 4.56 [IQR 4–5]. Moreover, the students found it valuable that the course was taught by doctors who were currently on the AFP, who themselves had successfully gone through the preparation and application stages and were able to impart experience-based, relevant and up-to-date guidance (median score 4.23 [IQR 4–5]). The attendees found the course useful in terms of identifying the breadth and relative quality of different resources to supplement the course material (median score 4.53 [IQR 4–5]).

Participants were also asked to include free text comments for any aspect of the course. Of the participants who chose to comment and whose comments relate to the lecture course (rather than the subsequent mock interview practice day), the qualitative results are shown in Table 2. The majority of comments were related to providing small group teaching on critical appraisal, more detailed guidance on 'white space' questions, and logistical improvements, e.g. starting later in the day to accommodate people travelling from out of London, but also highlighted the fact participants wanted a wider variety of AFP deaneries represented as well as AFP doctors at different stages of their programme.

## Discussion

To our knowledge this is the first study that demonstrates that through attending a focused course on academic medicine, UK medical students may enhance their knowledge,

**Table 1.** Overview of the content of the AFP course

Timings	Activity	Content
<b>1. Academic Foundation Programme (AFP) Overview</b>		
30 mins	AFP – Oxford Deanery experience	Current AFP doctors from each of these deaneries gave presentations of their experience of the application process, the programme and their own experiences
30 mins	AFP – West Midlands Deanery experience	
30 mins	AFP - London experience	
15 mins	Break & questions	Informal discussion with current AFP doctors
<b>2. Key areas</b>		
30 mins	Ethics	Overview of basic principles of medical ethics with examples of ethical issues that may be considered from an example abstract
30 mins	Clinical emergencies	Various important clinical scenarios discussed as well as important management, focusing on the ABCDE approach and the importance of patient safety
30 mins	Guest Speaker Lecture	A lecture about a career as a clinician scientist and the academic training pathway
30 mins	White space questions	Tips on how to answer the white space questions and bring in relevant experience to answer them
30 mins	Critical Appraisal	Overview of what aspects to consider when critically appraising clinical studies
15 mins	Break & questions	Informal discussion with current AFP doctors
15mins	Portfolios/presenting your CV	Brief overview of how to write a medical CV and make a portfolio
30 mins	Q&A session	Informal Q&A with current AFP doctors

confidence and preparedness in applying for a clinical academic programme. Delivery of lectures/workshops by recent successful candidates meant that current knowledge and advice could be imparted. Moreover, the relative quality and breadth of supplemental resources could be conveyed. The faculty delivering the material gained skills in the process and fulfilled part of the aims of the AFP by enhancing their own teaching abilities.

These findings corroborate previous research. The Doctors as Teachers and Educators programme was set up at Barts and the London School of Medicine and Dentistry to offer an introduction to educational theory.<sup>20</sup> End-of-course questionnaires demonstrated that nearly 100% of students had gained confidence in teaching. This highlights that focused interventions to encourage students to participate in aspects of academia have the potential to enhance their confidence in academic domains.

Previous research has shown that recruitment into academic medicine is an area of concern internationally. Clinical academics comprise only 6% of the UK medical workforce and numbers are declining.<sup>9</sup> Various initiatives have been

implemented to counteract this problem. The British Medical Journal along with 40 other partners previously launched the ICRAM (International Campaign to Revitalise Academic Medicine) in an attempt to 're-invent' academic medicine but outcomes were disappointing.<sup>13,21</sup> Problems cited included: a) reduced number of individuals acting as role models; b) lack of adequate administrative support for academics; c) demands of working for the university and the NHS and d) lack of exposure for medical students/junior doctors for careers as academic clinicians.

Medical schools have the responsibility of nurturing future academic medicine leaders, yet few medical students pursue academic medicine as a career pathway.<sup>22</sup> The CanMEDS Clover describes core competencies of specialist physicians that lead to optimal health and healthcare outcomes, one of which is a scholar.<sup>1</sup> Our group has previously voiced concerns that the 'scholar' domain is often a 'neglected competency in tomorrow's doctors'.<sup>3</sup>

Despite academic medicine being crucial for healthcare advancement, many universities lack adequate medical student teaching on developing sound research skills, how

**Table 2.** Qualitative data highlighting the areas of improvement as suggested by the participants

Area for improvement	No. respondents
Critical appraisal in small group teaching	18
More slots/time for mock interview practice	14
Logistics (e.g. later start time, coffee breaks etc)	11
More guidance on white space questions	10
More variety of AFP doctors and deaneries represented	8
More interactive	4
More courses on different dates	3
Handouts	3
More discussion on clinical emergencies	2
More detail on the application process	2
More advice on getting involved in audit/research	2
First hand accounts of a 'day in the life of...'	2
Presentation style (e.g. slower pace)	1

to publish and how to be a good medical educator. A recently conducted survey of 515 UK medical students showed that only 12% of students had any experience of applying to an ethics committee, 30% had received teaching on how to write a research abstract and only 22% had received teaching on how to write a research manuscript.<sup>23</sup> Different research methodologies can pose challenges. Our group has previously highlighted that surgical clinical trials in particular can be problematic with issues related to blinding, intervention complexity, inconsistent expertise of care providers, and centres' volume, which are often poorly reported.<sup>24,25</sup> Medical trainees must be able to critically appraise such methodologies to accurately evaluate effectiveness of interventions that would lead to optimal patient outcomes. Medical schools must nurture academic interest and enthusiasm in medical students. This is supported by work by Reinders et al. that showed doctors who engaged in extracurricular research at medical school produced four times as many publications as their colleagues after graduation, and were more likely to pursue academic careers.<sup>26</sup>

McLean et al. published '12 tips' to enhance student engagement in academia. These included encouraging medical students to participate in research and teaching as part of the undergraduate curriculum;<sup>15</sup> perhaps in the form of intercalated degrees. For universities not offering intercalated programmes, alternative measures to ensure students have a firm grasp of principles of evidence-based medicine must be in place. At the authors' institution, a Society of Research and Academia was set up for medical students and the lead author (as a senior medical student) was involved in delivering peer-led tutorials on evidence-based medicine to medical students undertaking

intercalated BSc degrees. This included teaching on key topics such as critical appraisal, study design, methodology and statistics. This can encourage students to critique papers and write letters to the editor, which, in turn, can generate scientific dialogue and enthuse medical students, making them feel part of the scientific community.<sup>8</sup> Offering medical students the chance to take part in research with the opportunity to take a project from design stage through to publication is associated with a career in academic medicine.<sup>27</sup> This would involve students developing multiple skills including applying to ethics committees, securing funding, generating hypotheses, data collection, statistics, critical appraisal and finally disseminating the findings via presentation and publication. Support from academic supervisors would encourage students to expand their research armamentarium.<sup>8</sup>

A major identifiable obstacle to academic careers is lack of mentorship and aspirational role models, with women particularly affected.<sup>28-31</sup> Moreover, women are under-represented in holding posts with academic content.<sup>18</sup> We therefore ensured that our course had many successful female academic doctors who would lead sessions/mock interviews and act as positive role models. We provided mentorship to students after the course and helped to tackle queries/concerns and alleviate anxiety.

The National Institute of Health Research integrated clinical academic pathway was introduced to encourage engagement in an academic career by delivering a structured route through clinical academic training from an introductory phase, through pre-doctoral fellowships, PhD programmes and postdoctoral lectureships.<sup>1</sup> However, there may still be a lack of awareness of these opportunities. Courses such as ours not only have the potential to benefit students considering pursuing academia but also those who have had little to no exposure and gain valuable insight by attending such an event in terms of how to begin entering the world of academia.

Our study has several limitations. There may be selection bias with students strongly interested in pursuing academic careers more likely to attend. The sample size was representative of only 11 UK medical schools and thus the results may not be generalisable to the entire UK medical student population. The response rate of 66% may mean the data are not fully representative, although this is a very high response rate for an online cross-sectional study. A single questionnaire post course was used for logistical reasons and to aid complete data collection. This may have a propensity for introduction of a degree of recall bias; however, by completing the pre course questionnaire after the course, students were able to use the information presented in the course as a 'benchmark' to help gauge more accurately their initial level of preparation. It is nevertheless reassuring that the students felt the course enhanced their confidence, preparedness and knowledge.

An international collaborative effort is required by medical student faculty members, researchers, supervisors and administrative staff to enhance student engagement in academia. Future research is required to ascertain whether such courses and conferences enhancing exposure to academia and awareness of clinical academic programmes facilitate future recruitment.

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