Why a PhD/MD enhances gastroenterological training

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Academic medicine has faced an alarming decline in recent years necessitating the realisation of an integrated academic training pathway. This initiative has enabled many graduates to enter a structured academic training environment potentially leading to the award of a higher degree. A period of out of programme research or experience remains popular with trainees in gastroenterology, with up to 20% of trainees undertaking this at any one time. Most trainees believe that possessing a higher degree leads to improved job aspects. However, it is our belief that undertaking a higher degree leads to a global enhancement of gastroenterological training. Firstly, undertaking a higher degree facilitates the development of a myriad of personal and professional skills ranging from communication, research, scientific, critical thinking, problem solving to time and project management. These multifaceted transferrable skills are as applicable to the bedside as to the bench and in our belief are highly desirable with potential employers. Secondly, the acquisition of a higher degree allows the trainee to develop a subspecialty interest and a network of contacts, both national and international, within one's chosen field. Finally, we argue that the addition of time in research to the training period allows personal and professional maturation hitherto less easily achieved in the standard training period of 5 years. Overall, pursuing a higher degree in gastroenterology is a pursuit of excellence, something we should all strive for.

Introduction

Whether or not to undertake a period of dedicated research, ultimately leading to the award of a higher degree, is a question that has vexed the minds of most, if not all, trainees in gastroenterology. Demonstration of such academic prowess has been seen almost as a prerequisite to gaining a consultant appointment, being reflected in the large proportion of UK gastroenterology consultants possessing a higher degree.¹ These observations are not limited to gastroenterology

as a specialty per se but may be seen in the high levels of academic achievement across the National Health Service (NHS) consultant workforce. We should not be in the least surprised at this as there is an inescapable inter-relationship between clinical academics, medical education, the conduct of clinical research and the development of new treatments. However, this symbiotic relationship is under threat; it has been estimated that 10–20% of UK academic posts are vacant, coupled with a 23% reduction in junior academic staff and most recently the global contraction of government funding across the higher education sector.² While concerns about the decline of academic medicine are not new, a combination of a reduction in funding and diminution of training times has the potential to lead to conditions for the 'perfect storm'.^{3,4} The International Campaign to Revitalise Academic Medicine and the British Society of Gastroenterology (BSG), in conjunction with the Royal colleges, have worked to address these concerns. In attempting to redress these issues, the creation of the integrated academic training pathway has redefined and restructured joint clinical and academic training into a more streamlined process.⁵ This initiative is beginning to bear fruit, allowing the most gifted graduates to excel in both research and clinical medicine, leading to strong academic leadership at the bench side but also cutting edge, high quality and innovative medicine at the bedside.

Central to the achievement of these goals remains the trainee themselves. While it remains that the majority of trainees entering research do so for career progression, the period spent doing research does have a knock on effect in the development of multifaceted transferrable personal and professional skills. Herein we highlight the merits of pursuing a higher degree in enhancing gastroenterological training.

Gastroenterology research among UK trainees

Reflecting the worries around the decline of academic medicine in the UK, concerns have been raised regarding the reduction in research output within the field. For instance, there has been a fall in the number of publications achieved by trainees in gastroenterology gaining consultant status, from 19 in 1994 to only five in 2002.⁶ A recent study by Hopper and colleagues⁷ examined the number of abstracts presented to the annual BSG meeting which were subsequently published as full papers over an 8 year period. In 1994, 57.6% of abstracts presented to the BSG went on to be published as full papers whereas in 2002 this figure had dropped to 30.7%. The reasons that underlie these observations are complex but potentially include fewer publications in higher impact journal and a change in trainees' attitudes to research.

Trainees attitudes' to research

There are currently 795 trainees in gastroenterology in the UK of whom 142 (17.8%) are currently undertaking a period of out of programmed experience (OOPE) with an associated 22 academic registrars/lecturers on the integrated academic training pathway.⁸ The figure of approximately 20% of trainees undertaking OOPE is stable, with the majority of those performing research registered for a higher degree.⁸ Furthermore, evidence indirectly suggests that most trainees in gastroenterology are undertaking a higher degree as the mean training time is 7.2 years, 2.2 years longer than the standard specialist registrar training of 5 years. In a recent survey of trainees in gastroenterology in the West Midlands workforce deanery performed by Sadler and colleagues,⁹ 38% of respondents had completed, or were completing, a period of research culminating in a higher degree, with 12% of those questioned having been awarded a higher degree. Undertaking research towards a higher degree remains popular, with 70% planning to do so, with 63% willing to move out of region to achieve this aim. A survey of specialist registrars conducted by the Royal College of Physicians in the year 2000 suggested that 90% wished to undertake research although the latest data suggested that this has dropped to 68%.^{10 11} Whether the differences in these figures represent different attitudes among trainees in gastroenterology or a reduction in trainees' appetite to perform research is unclear. Among the most common reasons for not wanting to undertake research training were personal choice and the associated financial burden or cost. Of particular interest in Sadler *et al*'s survey were the motivating factors that trainees perceived as being important in undertaking research towards a higher degree: 98% believed that a higher degree made them more competitive at consultant interview, resulting in a perceived improvement of job prospects. This result is not surprising and something that we would agree with, but we would strongly argue that undertaking

research towards the award of a higher degree offers many more benefits than this and indeed outweighs the disadvantages (see figure 1). We will now review each of these benefits individually under the umbrella terms of scientific and personal considerations.

Scientific considerations

Understanding research methodology and the development of critical thinking

Advances within any field of medicine are closely coupled with effective research and development. Underpinning these advances are often sophisticated research methodologies, a complete understanding of which is essential in being able to interpret, evaluate and implement these into routine clinical practice. What better way to understand these methodologies than to perform one's own research? The ability to appraise and critique novel data and technologies is key to the development of an informed and educated opinion. This may be done informally with many research groups operating regular journal clubs facilitating, often lively, discussion and debate. Further to this, many learned journals encourage junior researchers to peer review scientific manuscripts; indeed, they often produce more critical and thorough reviews than their senior counterparts!¹²

Acquisition of scientific skills, hypothesis testing and working within a (non-clinical) multidisciplinary team

A period of dedicated research allows the trainee to design experiments to test a hypothesis, the latter often being related to a larger predefined project. Clearly this is not possible without the guidance and expertise from other professionals allied to the field who may not have a clinical background (for instance the basic scientist or the physiologist), many of whom the trainees would not ordinarily come into contact with. These interactions enable the trainee to develop scientific skills, within a truly multidisciplinary environment, which affords the aforementioned hypothesis testing. When science is conducted *de rigueur*, there is nothing more satisfying than making novel observations that confirm or refute one's research question. However, good research takes time and the development of patience,

Figure 1 The relative advantages and disadvantages of undertaking a period of research training towards a higher degree.

and often dogged determination, requires the recalibration of one's temporal expectations. Within clinical practice, gratifying results are often seen rapidly—for instance, the patient with severe ulcerative colitis responding rapidly to a course of intravenous corticosteroids. The rewards in research however, while no less exciting and gratifying, take time; rather than hours or days they may take several months or even years. Performing and conducting one's own research allows the development of a unique insight into the hard work and dedication needed to succeed in this sphere of endeavour.

The development of a subspecialty interest/niche

One of the knock on effects of undertaking a period of dedicated research is the development of a subspecialty interest within the differing disciplines that encompass the field of gastroenterology. The majority of UK trainees in gastroenterology entering research will undertake their project at specialist centres, thereby often allowing access and exposure to 'cutting edge' management of complex clinical scenarios in a tertiary environment often under the supervision of international authorities in their fields. Such contact not only maintains one's general clinical skills but also facilitates the development of subspecialist skills not ordinarily available. The time pressures on training since the naissance of the European working time directive have acted to make the pursuit of a subspecialty interest even more difficult than previously. Coupled with service provision across general gastroenterology and general internal medicine, trainees undertaking a period of OOPe are at a distinct advantage in these respects. Proposed changes by the Specialty Advisory Committee to the 2010 gastroenterology curriculum may go some way to address these concerns by enabling trainees, on a competitive basis, to undertake more specialised training in specialities such as advanced endoscopy, nutrition and hepatology.

Communication skills, peer group recognition and effective networking

Effective dissemination of one's findings is considered to be a central skill of the complete researcher. During a period of research it is likely that the trainee will have a number of opportunities, both in oral and poster format, to relay novel research findings. Performing under pressure is something that clinicians are used to, but in the context of an international meeting, often under the scrutiny of international experts, the territory may be somewhat less familiar to the trainee. If such an opportunity is seized, this inevitably leads to peer recognition, further cementing one's position within a subspecialty. Many subspecialty sections operate international young investigators' meetings—for instance, the young investigators of the European Society for Crohn's and colitis and the international functional-brain gut group—thereby enabling the

trainee to interact with other trainees and scientists, often at similar stages in their careers, from around the world. Such experiences often forge strong personal friendships and productive collaborations for years to come.

Personal considerations

Time spent in a research post aids the development of many personal skills, which are invaluable in a medical and scientific career. In fact, many higher education institutions insist, as part of the process of obtaining a higher degree, that students/trainees attend a specified amount of transferrable skills training, evidence of which has to be produced before any award is conferred. At our institution there is a considerable breadth of courses offered, ranging from how to deliver an effective poster presentation to mind mapping and speed reading to name but a few! In conjunction with the standard training curriculum, such opportunities facilitate the development of a broad skill set for the trainee.

Personal accountability, time and project management

One of the most refreshing experiences of research is the ability to have some control over one's working week. While the lack of regimentation may not suit all trainees, developing a sense of personal accountability in terms of time and attendance develops important attitudes and skills. The acquisition of these skills is essential in the management of the research project during OOPe. For instance, anticipating the next rate limiting step within a research project (eg, financial, in terms of securing further grant funding) allows the trainee to potentially put strategies into place to potentially alleviate these difficulties. Inevitably, the trainee has a vested interest in driving forward a research project to its conclusion, thereby developing important leadership and project management skills. Vis-à-vis the trainees' future role as consultants within the NHS, personal accountability, time and project management and leadership skills are central to a successful and fulfilling career. Thus is it not unreasonable to suppose that consultant appointment committees regard those trainees who have completed time in research successfully in a more favourable light.

Budget management and business plans

Understanding budgets and careful financial management within a research project is critical to achieving a higher degree. The trainee may have limited input into overall departmental funding but keeping a research project within budget is crucial to its success. Sadly for the trainee in gastroenterology embarking on a research project such budget management is not confined to the laboratory or workplace. In a small sample of trainees in gastroenterology we surveyed at our institution, the average take home pay was approximately £1000 per month less than their previous clinical job. Couple this with variable university/tuition/bench fees, and often

having to move out of the area, this requires significant budgeting, not only on the part of the trainee but their families too. Trainees undertaking research therefore need to develop their own business plan to alleviate these deficits whether that be participating in the local on-call rota, helping with waiting list initiative clinics or endoscopy lists. In an era of uncertain financial certainty within the NHS, as well as the wider society, the development budgeting skills, in the context of an overall business, can be considered as highly desirable attributes not ordinarily achieved in standard clinical training.

Developing writing skills

The award of a higher degree comes at a price: the thesis. This is the penultimate hurdle on the long road of research and for most will be the lengthiest document that they ever write. Expressing ideas, methodologies, results and discussions in a succinct and readable style is a challenge for any trainee. However, this challenge encourages the development of scientific writing skills, much of which may go on to be published, albeit in an abridged form, in learned journals.

Extending training time

Although there is considerable controversy as to what is the most appropriate point during training to enter a period of OOPE, undertaking a higher degree, and particularly a PhD, significantly lengthens the time to gaining the certificate of completion of training. Many authorities would conjecture that this is disadvantageous; we would argue the contrary, that the lengthening of training is beneficial to the trainee. Firstly, it allows the trainee in gastroenterology to mature, particularly on a professional level. Secondly, many trainees continue to contribute to the clinical activities of their unit throughout their time in research through participation in on-call rotas, endoscopy lists and outpatient clinics so that they may accrue more clinical experience. Finally, it engenders a certain sense of belonging as a 2 or 3 year placement is a rarity in general professional and higher specialist clinical training, thereby allowing the trainee to make a more significant and sustained contribution to their department.

Disadvantages of pursuing a higher degree

For the trainee in gastroenterology, there are some distinct disadvantages in pursuing a higher degree. For those who undertake research for the only reason of career advancement, the experience may well be a negative one. Thus the trainee must be mindful of the wealth of options that are open to them other than a period of scientific research per se. For example, it has become increasingly popular in the recent past for trainees to gain qualifications in a diverse range of pursuits, such as medical education and medical management. Furthermore, with the current financial pressures on biomedical research funding councils, the opportunities for trainees to engage in gastroenterological

research may diminish, thus forcing trainees to look elsewhere for such personal and professional development. In terms of gaining a consultant's post, perhaps the most salient disadvantage is having completed time in research but not having had a higher degree conferred. The most common reason for this is that the trainee does not submit their thesis. The causes for this are multiple but include trainee factors and external factors. The former include poor motivation, poor project management and too much clinical commitment, and the latter include poor supervision, experimental failure and funding or departmental difficulties. In attempting to improve completion rates, many higher education institutions have a series of examinations at regular intervals, thereby helping the trainee to complete their thesis and achieve their award. For example, at our institution, there are regular written and oral assessments at 9, 18 and 30 months in conjunction with a 3 monthly departmental review.

Concluding remarks

Pursing research towards a higher degree has been the traditional path for the NHS consultant gastroenterologist in the UK. It is our belief that this extra period of training enhanced their skill mix both professionally and personally. The development of a diverse, complementary and transferrable skill set from bedside to the bench and back remains as relevant to trainees in gastroenterology as it did in yesteryears. We extol the virtues of pursuing a higher degree in the strongest terms in enhancing our trainees in gastroenterology today, many of whom will be our leaders and clinical champions in the future.

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