

Barriers to Clinical Academic Surgical Training and Career Development in the United Kingdom: A Review from the National Institute for Health and Care Research (NIHR) Advanced Surgical Technology Incubator (ASTI) Group

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Abstract

Clinical academics play a vital role in advancing medical research, knowledge and treatments within the National Health System (NHS), but this career's sustainability is at risk due to barriers to accessing and pursuing research opportunities throughout a surgeon's training and career. Despite the diversification of surgical training with integrated opportunities, challenges such as limited training opportunities, lack of protected research time, and financial constraints persist. This paper from the National Institute for Health and Care Research (NIHR) Advanced Surgical Technology Incubator (ASTI) group highlights these issues, addressing the competitiveness of academic pathways, workload balance, mentorship importance, and the need for standardised assessments. It highlights the need for greater accountability from healthcare employers and academic institutions. Additionally, the paper focuses on increasing diversity and inclusion in clinical academia, addressing systemic discrimination, and changing the NHS culture. This paper calls for collective efforts from the medical profession, government, and institutions to address these issues.

Key words: academia; surgical training; clinical academic

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Introduction

Medical research is pivotal to advancing knowledge and treatments for the benefit of the population, and clinical academics play a vital role in the National Health System (NHS) and the wider research community (Morrison and Wood, 2004). Clinical academics usually undertake mixed commitments between clinical practice and academia: these may include clinics, surgical operating and service provision alongside conducting and supervising research, dissemination of findings, teaching, and stakeholder engagement.

In the United Kingdom (UK), careers in clinical academia have become established in recent decades in response to demands to bring insights from clinical practice into research, direct and focus research efforts, translate non-clinical studies into clinical guidelines, and bring the latest medical techniques to the clinical frontline (UK Parliament, 2023). These careers also satisfy the growing desire of clinicians to lead and undertake research. Involvement with research from basic science to clinical trials also brings funding into universities and the NHS and investigating innovations in the current state of underfunding and service backlog can help the NHS to become more effective and efficient (Banerjee et al, 2018; UK Parliament, 2023).

However, clinical academia is at risk. In the United Kingdom, the clinical academic workforce is diminishing as fewer clinical academic trainees will be available to replace those who will retire in the next ten years. Furthermore, the number of Phase III trials has decreased by 41% from 2017 to 2021 in association with the Coronavirus disease (COVID-19) pandemic (Association of the British Pharmaceutical Industry, 2022; Mahase, 2022; Nishiwaki and Ando, 2021; The Academy of Medical Sciences, 2020). This is due to worsening pressures on the NHS and career-specific issues, such as challenges in accessing training, systemic issues and barriers, and lack of mentoring and support (UK Parliament, 2023; Windsor et al, 2015). Whilst these challenges are well known among clinical academics, the literature provides scarce evidence of their prevalence and wider impact on healthcare and academic institutions.

This consensus paper from the National Institute for Health and Care Research (NIHR) Advanced Surgical Technology Incubator (ASTI) explores the challenges and barriers to starting and advancing a clinical academic career in the NHS (National Institute for Health and Care Research, 2020). The paper highlights the experienced and perceived barriers to accessing research throughout surgical training and further career. It will also explore barriers to developing research independence and becoming established in one's field. Lastly, this paper will offer evidence-based and anecdotal suggestions for widening participation in research at all career stages.

Literature Search Strategy and Selection Criteria

We identified references for this review through searches of PubMed for articles published from 1 January 2000, to 12 June 2024, using the search terms “clinical academic”, “academic”, “training”, and “career” in combination with the terms “barrier”, “progression”, “difficult”, and “challenge”. We also identified relevant articles through searches of the reference lists of the identified literature. We reviewed articles resulting from these searches and relevant references cited in those articles and included articles only published in English. A narrative synthesis of findings was performed.

Getting Started in Clinical Academia

Being involved in research, teaching and leadership are established components of surgical training and practice as a clinician. This is encouraged throughout medical school, and students recognise the importance of medical research to their clinical practice and future careers (El Achi et al, 2020). These early opportunities, such as student-selected components and intercalated degrees, are essential for stimulating an interest in clinical academic careers and encouraging early engagement. However, the range of opportunities is limited by the academic inclination and involvement of parent institutions (El-Hassan, 2022). Nonetheless, these are essential components for recruitment to postgraduate surgical training in the UK: this is the case for ‘traditional’ training and, ever more so, for integrated academic training (IAT) (Sooriakumaran, 2004).

‘Traditional’ routes in academia remain the most prevalent, which involve undertaking research alongside traditional surgical training. This relies on the significant self-driven, individual burden to utilise one’s own time and financial resources to undertake extra-curricular academic work (Hurreiz, 2019; Sooriakumaran, 2004). For surgical trainees who have an interest in academia, it is challenging to secure time off against busy clinical schedules with gaps and unfilled shifts, which can cause hostility with administrative staff and colleagues within the department (Hurreiz, 2019; Sooriakumaran, 2004; The Association of Surgeons in Training, 2023). This is due to the lack of protected academic time on clinical rotas, limited contractual entitlement for study leave, and little to no funding available.

Surgical consultants face similar and additional challenges to developing and establishing an academic portfolio after being appointed. Most established clinical academics did not have opportunities as today’s trainees, such as IAT, available to them. Therefore, they have shaped their own training pathway to develop a specialised portfolio of opportunities and skills necessary to become clinical academics (UK Parliament, 2023). Nonetheless, IAT has somewhat tackled some of these barriers to clinical academia whilst presenting new ones, too.

Integrated Academic Training

IAT is now an established route into clinical academia. This includes programmes for all stages of training, from newly qualified doctors to sub-specialist fellowships after completion of training (Medical School Council, 2023; National Institute for Health and Care Research, 2023). The aim is to provide early opportunities in training to gain experience in the role of clinical academics whilst offering the optimal springboard to subsequent career development, including a PhD or MD (Medical School Council, 2023; The Academy of Medical Sciences, 2020). IAT is characterised by protected rostered time to undertake academic work. Some IAT programmes also provide additional, although still limited, study funds, and dedicated training opportunities, such as Postgraduate Certificates programmes and more (Lyons et al, 2010; Medical School Council, 2023; Ologunde et al, 2018). Although increasingly popular and competitive, IAT also carries additional challenges in balancing both academic and clinical duties.

Firstly, both clinical academic and surgical training pathways are increasingly competitive: whilst service provision demand and number of applicants grow, the number of training posts has remained stagnant. Candidates are required to possess comprehensive portfolios by the time of application, which is as early as the same year of medical school graduation or a couple of years after (Burton, 2023; Ferreira, 2024). These conditions have produced a ‘tic-box’ culture beginning in medical school, which exacerbates the attainment gap between those who have the academic and financial resources to achieve a competitive curriculum and those who do not. However, this does not reflect candidates’ true academic and clinical potential (Ferreira, 2024; Morrison and Wood, 2004; Stewart, 2002).

Secondly, the structure of IAT can also be logistically challenging. Due to the rotational nature of training, establishing academic contacts is difficult, affecting mentorship and supervision. Mentors play a vital role in helping early clinical academics navigate the challenges of the career path, access opportunities, and successfully establish academic careers (UK Parliament, 2023). In fact, students identified the lack of mentoring and guidance as the main barriers to conducting medical research, and surgical academic trainees reported the need for academic mentorship to balance academic and surgical training duties (Blencowe et al, 2017; El Achi et al, 2020).

Third, variation in the delivery of surgical IAT leads to inconsistent provision of protected time for research, dissatisfaction with academic training, and lack of consistent academic supervision. Furthermore, there is an unbalanced focus on service provision rather than the acquisition of surgical skills during clinical duties (Blencowe et al, 2017). For example, academic surgical trainees have less clinical time and exposure to achieve the same level of clinical competencies as their full-time clinical surgical colleagues. This can cause additional attrition within this cohort of trainees (Blencowe et al, 2017; National Institute for Health and Care Research, 2023).

Fourth, competition, barriers to progression, and access to funding and resources vary greatly amongst IAT programmes and specialities. For example, whilst surgery is one of the largest collective specialities with a wide and expensive service provision for the health budget, it also has the smallest number of clinical academics. Furthermore, some surgical specialities, such as neurosurgery, face greater competition due to limited training numbers and opportunities available (Blencowe et al, 2017; Medical School Council, 2018; The Association of Surgeons in Training, 2023).

Fifth, there are no metrics or standardisation to measure the successful completion of IAT. As there is no standard assessment of what successful academic training should be, there is no accountability of healthcare employers and universities against academic indicators for training (Medical School Council, 2023; UK Parliament, 2023).

Lastly, doctoral degrees, such as MD and PhD, are an integral part of IAT. However, there is no guidance for prospective candidates on when it is most beneficial to pursue these, such as early in undergraduate or postgraduate training, later towards completion of training or in the early years of consultancy (Hurreiz, 2019; Lopes

et al, 2017; Sooriakumaran, 2004). At the same time, these require a substantial financial commitment from aspiring candidates (Blencowe et al, 2017; Sooriakumaran, 2004). This is because of a pay freeze or loss due to the research salary not being matched to the NHS contractual pay banding. Similarly, doctoral degrees will usually impact clinical academics' ability to undertake on-call duties, which brings a financially significant pay premium to the basic banding in doctors' salaries. Furthermore, taking time out of training and delaying the completion of training postpones, or even prevents, benefitting from the last years of the highest banding of the consultant pay scale; as a result, this will impact clinical academics' direct income alongside their pension.

Despite the challenges of traditional surgical and IAT, trainees continue to recognise the value of academic careers and pursue these (Ashmore, 2019; Blencowe et al, 2017; Hurreiz, 2019; Sooriakumaran, 2004). Whilst acknowledging the benefits of IAT, IAT trainees and consultants constitute a small proportion of the workforce and traditional surgical training is still invaluable to maintain academic diversity.

Clinical Academic Careers as a Consultant

Although the first newly qualified consultants who have undergone IAT are now being appointed, clinical academics make up around 4.6% of the consultant workforce (Medical School Council, 2023). Therefore, the remaining consultant workforce faces significant challenges in accessing academic opportunities.

The transition into consultancy is a significant shift in the type of employment and responsibility from being a surgical trainee. For clinical academic consultants, it is essential to diversify their portfolio of academic and surgical skills and expertise and understand what this brings to their employer. However, it is more challenging to start as an academic consultant in a new hospital or with a new healthcare employer compared to continuing to work within the same department where a newly appointed consultant has trained.

Research training for consultants has historically been lacking, but more opportunities are now available. All consultants are supported to have 25% of their contracted time to undertake any other professional activities, including research (National Health Service, 2017; NHS Employers, 2007; UK Parliament, 2023). Furthermore, schemes as such the Medical Research Council (MRC) and NIHR Clinical Academic Research Partnerships (CARP) provide senior clinicians and healthcare professionals, with previous research experience and a PhD, with the opportunity to integrate research into their job plan and protected paid time (National Institute for Health and Care Research, 2023). However, there is not a clear progression pathway after CARP, and further opportunities are open to everyone with high competition, especially by young clinical academics being a clear, better match for this career pathway.

Nonetheless, both full-time clinical consultants and clinical academics face increasing challenges to ensure their research time is protected from the increas-

ing healthcare service pressures ([National Health Service, 2017](#); [NHS Employers, 2007](#); [UK Parliament, 2023](#)).

Furthermore, the perception of academic consultants can be a barrier to pursuing an academic portfolio. For clinical academic surgical consultants, this can be three-fold. Firstly, there is ambivalence in the privileged treatment of colleagues with a private surgical practice compared to those with an academic portfolio. Second, clinical academic consultants may be treated as having a flexible work schedule and, therefore, able to pick up additional clinical work, such as clinics and operating lists, as required, which is not contractually possible. As a result, clinical academics are often pressured into being more flexible around their academic commitments. This may include being selective about which meetings and conferences they attend, to be perceived as equals to their full-time clinical colleagues. Third, mixed job plans for clinical academics can be perceived as working part-time. In reality, the combined academic and clinical workload is often greater than a full-time equivalent, leading to an increased risk of burnout among clinical academics ([Medical School Council, 2018](#); [Nassar et al, 2019](#)).

Ultimately, with a dual portfolio, clinical academic consultants have two employers in healthcare and academia. As a consultant's reputation grows in each employment, so do the challenges increase.

The Dual Nature of Clinical Academics

An equally important challenge for clinical academics is being a recognised expert in their clinical field and achieving a high academic profile. Time to fulfil academic duties is subsidised by the healthcare employer via an agreement with universities. This carries doubled challenges in coordinating clinical duties with academic commitments, including clinics, operating lists, conferences, invitations to keynotes, supervision, mentorship, and so on.

Firstly, finding and developing one's own niche of expertise can be challenging whilst balancing clinical and academic duties, tailoring an unspecialised portfolio to personal academic interest, and achieving a highly visible profile within this competitive field. As previously discussed, this can be due to the pressures of service provision, lack of protected research time, rotational nature of postgraduate training, and the lack of mentorship.

Clinical academics early in their career may primarily struggle with this due to the lack of opportunities available in their chosen field, such as clinical projects, Master's degrees, and PhD. Moreover, students and trainees are also limited in their portfolio development by the work already underway at their institution or the portfolio of interests and expertise of any senior clinician willing, able to or allocated to supervise them ([Ashmore, 2019](#); [Blencowe et al, 2017](#); [Lopes et al, 2017](#); [Raine et al, 2022](#)).

In contrast, senior clinical academics are faced with increased scrutiny. Firstly, different metrics of credibility and success may be applied to clinical academics in different specialities, e.g., medical and surgical, community and secondary care, and so on. Second, growing one's reputation and credibility in their field is based

on work output and dissemination. However, some specialities do not benefit from high-profile peer-reviewed journals with high impact factors or that would be considered 'REF' (Research Excellence Framework) returnable. In contrast, where such scientific journals are present, it can be extremely difficult to achieve high-standard work for publication at individual centres without collaborating with other units nationally or internationally. This is the case for relatively specialities with comparatively lower case volumes, such as neurosurgery, or surgical subspecialties.

Simultaneously, universities are not taking into consideration that a clinical academic cannot be compared with a full academic with regard to metrics of success, including grants, supervision, teaching, etc. The ability to generate academic output is limited by clinical commitments, even more so amongst surgical specialities. On the other hand, the translational impact and patient benefit are often driven by clinical academics, and this should be recognised and valued. Given the significance of clinical academia for healthcare, we should strive to expand the recruitment of full-time surgical academics, who can develop a dedicated academic portfolio whilst training and providing the same clinical service via a shared job plan.

Improving Access and Widening Participation

Despite new resources aimed at supporting prospective clinical academics in gaining a further understanding of this career, such as the Clinical Academic Training & Careers Hub (CATCH), clinical academia remains perceived as inaccessible due to complex, interlinked challenges ([Medical School Council, 2023](#)).

First, training as a clinical academic delays completion of training because of time spent out of training to complete additional degrees or reduced clinical duties to accommodate an academic role, which may require additional time to achieve clinical competencies ([Blencowe et al, 2017](#); [Hurreiz, 2019](#)).

Second, the cost of IAT and academic endeavours is extortionate. The cost of surgical training alone ranges between £20,000 and £26,000 for most surgical specialities, which is not covered by the training budget ([Ashmore, 2019](#); [O'Callaghan et al, 2017](#)). This has driven a demand for cost-neutral equivalents to recognised courses required for surgical recruitment. However, this alternative is not available to clinical academics who face increasing costs to upkeep their portfolios. The Association of Surgeons in Training (ASiT) is surveying trainees about the hidden costs of surgical training to inform key stakeholders, also exploring the financial burden of advancing a clinical academic career ([The Association of Surgeons in Training, 2023](#)).

Third, an additional important barrier to a career in clinical academia is previous experiences ([Blencowe et al, 2017](#)). Networking is dependent on having the right connections with fellow academics, who are only privy to those who have previous experience and means to access these. Ultimately, this creates a negative external perspective of an elitist group. On the other hand, challenging relationships with unsupportive or obstructive employers, clinical, educational or academic supervisors, or mentors can significantly deviate or halt one's interest in clinical

academia and future endeavours. These may include difficulty in booking time off, accessing funding resources, being recognised for one's academic work, and so on. These toxic interactions result from elitism, exclusion, stereotyping, and collective attitudes, and they are amplified within this close-knit community ([The Association of Surgeons in Training, 2024](#)). Therefore, there is a need for a significant culture change within our profession and amongst healthcare managers.

Fourth, training as a clinical academic is associated with uncertainty in career progression and employment due to increasing demands for ongoing professional development and increasing competitiveness for available opportunities. Job uncertainty, the rotational nature of surgical training and being employed by two separate institutions contribute to additional challenges in balancing personal and professional commitments ([The Association of Surgeons in Training, 2024](#)). These include not only demands on financial resources, but also the burden on personal life, relationships, and work-life balance.

Fifth, we must face the issues of existing disparities and systemic discrimination faced by colleagues in our profession. Although there has been an increase in women in academia since 2004, they are a minority, and their activity decreases drastically with academic seniority. Similarly, the clinical academic workforce's ethnic profile is not reflective of the wider medical profession. 76% of clinical academics identify as White and 17% identify as Black or from other Minority Ethnic groups. These proportions are even lower in surgical specialities ([Medical School Council, 2018](#); [Royal College of Surgeons of England, 2021](#)). Furthermore, current academic assessment measures, such as REF, appear to amplify well-recognised existing disparities within the workforce ([Davies et al, 2024](#)).

We acknowledge these issues are not unique to the UK, but the literature provides scarce evidence even to explore the challenges faced by colleagues within this context. This indicates that we are only scratching the surface of a global problem that is yet to be fully addressed. Whilst recognising the benefit of research to clinicians, service provision and the public, the challenges that have arisen are significant and they must be addressed to ensure the longevity and sustainability of this career pathway.

Recommendations

Therefore, we propose the following recommendations to begin tackling these challenges in the UK.

(1) Funding: increase funding allocated for clinical academic training, research projects, and opportunities at all stages of career. Dedicated grants and scholarships should be made available to cover the costs associated with building and advancing clinical academic careers. The number of clinical academic training and surgical training posts should be expanded in line with the expansion of medical school places and service provision demand.

(2) Policies: develop and enforce policies to ensure the protection of time, funding and resources allocated to academic activities at all stages of career. These should include guidance on the expansion of surgical and clinical academic train-

ing posts, increased funding for clinical academic training and opportunities, and initiatives to raise the profile and widen participation in clinical academia.

(3) Relationships: it is a shared duty amongst clinical academics and organisations to foster the next generations of aspiring researchers. There should be increased opportunities for senior academics to provide mentorship and networking opportunities in their local contexts.

(4) Diversity and inclusion: policies, funding and activities must be developed to address the lack of diversity in clinical academia. Focus should be placed on recognising and addressing the systemic societal and healthcare disparities amongst marginalised groups. By encouraging, empowering, and promoting prospective and established clinical academics from underrepresented groups and protected characteristics, such as low socioeconomic backgrounds, minority ethnic backgrounds, gender identities, sexual orientation, and many more, we can strive to create a clinical and academic workforce which is reflective of the population ([Medical School Council, 2023](#); [Morrison and Wood, 2004](#); [Raine et al, 2022](#); [Royal College of Surgeons of England, 2021](#)).

(5) Evaluation and accountability: develop and adopt metrics which appropriately reflect the dual contributions of clinical academics in both research and patient care throughout training and consultancy; conduct regular quality assessments of academic training programmes delivered by NHS university and organisations to ensure they meet established national standards and address trainees' needs; regularly assess the healthcare needs of the population and align training programmes with these needs to ensure resources and funding are allocated to specialities where there is genuine demand for services and research.

(6) Changing culture: clinical academics, full-time clinicians and organisations must work collaboratively to address stigma and barriers surrounding research and clinical academia. Toolkits should be developed to clearly communicate the value of clinical academia and its impact on clinicians, researchers, employers, healthcare providers and the public.

Conclusion

Clinical academia in surgery is essential for advancing medical knowledge and improving patient care, yet it faces significant challenges in the UK. To sustain and enhance the clinical academic workforce, we must address the systemic barriers hindering entry and career progression. This involves increasing funding, protecting dedicated time for academic pursuits, promoting diversity and inclusion, and establishing robust evaluation and accountability measures. By implementing these recommendations, we can foster a thriving clinical academic environment that supports innovation, improves patient care, and reflects the diverse population it serves. Investing in clinical academia is essential for the continued growth and effectiveness of the NHS and the broader medical research community.

Key Points

- Clinical academia is crucial for advancing medical research within the NHS, but it faces sustainability issues due to career-specific challenges and systemic obstacles.
- Integrated academic training offers a structured route into academia but is highly competitive and demands balancing clinical and academic duties, which can be logistically challenging.
- The transition from trainee to consultant in clinical academia presents additional challenges, including balancing dual employment, maintaining research time, and overcoming colleagues' perceptions of part-time work.
- Widening participation in clinical academia is hindered by financial burdens, increased training time, the need for supportive mentorship, and systemic discrimination, particularly affecting women and minority ethnic groups.
- Recommendations to tackle these challenges include increasing funding, introducing policies to protect clinical academics, enhancing mentorship and networking, prioritising diversity and inclusion, holding stakeholders accountable, and changing culture.

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Not applicable.

Author Contributions

Conception and design: VC, WB, MC, SG, VW, RKM. Drafting the article: all authors. Critically revising the important intellectual content of the article: all authors. Approval of and accountability for final submission: all authors. Accountable for all aspects of the work: all authors.

Ethics Approval and Consent to Participate

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Conflict of Interest

The authors declare no conflict of interest.

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