

Abstracts from the Lancaster Academic Clinical Trainees Symposium, 25th February 2019

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The second annual Lancaster Academic Clinical Trainees Symposium took place on 25th February.

In this article we briefly review the process of academic clinical training, and present the abstracts from the Symposium, illustrating the diversity of the work that is undertaken by academic clinical trainees at LMS and its associated NHS Trusts.

ACADEMIC CLINICAL TRAINING

Academic clinical trainees are doctors who undertake academic training alongside their clinical training. In most cases this is focussed on research, though training in education and leadership are increasingly popular. Projects are undertaken with the guidance of a supervisor and may involve formal research training through degrees such as the MD or PhD, or the completion of taught programmes such as the MSc in Clinical Research. An established *integrated academic training* (IAT)¹ pathway exists to provide academic training at a level corresponding to clinical training (Fig. 1). This includes intercalated degrees at medical school, the academic foundation programme (AFP), and academic clinical fellowships (ACFs) and clinical lectureships (CLs) at a specialty training level. It is common to join this pathway at any stage, and trainees often leave the pathway then return to it, for example to undertake out-of-programme doctoral training.

Funding for academic clinical training may be provided by individual institutions, through Local Education and Training Boards such as Health Education North West (HENW), via institutional awards from the National Institute for Health Research (NIHR), or via competitively-recruited personal fellowships provided by funders such as the NIHR, the Medical Research Council (MRC), and the Wellcome Trust.



Forrest Hills in the spring sunshine.

ABSTRACTS

In order to showcase the work of Lancaster's academic clinical trainees, attendees were invited to present their projects in a 'three-minute thesis' style².

Dr Khaleel Ahmed, Academic Foundation Year 2 Doctor, ELHT

Burnout and stress are evidenced as being areas of concern for both medical students and junior doctors. At the University of Lancaster students undergo a mindfulness session to help give the tools to cope with the stress of clinical years of undergraduate study. This project aims to gather evidence about medical student wellbeing using a validated wellbeing assessment tool, and qualitative data regarding views towards their course. The second arm of the study will involve semi-structured interviews to gather opinions and views of wellbeing and mindfulness within the medical undergraduate environment.

AFY Award-Winner: *Dr Liam Barrett, Academic Foundation Year 1 Doctor, ELHT*

The decision as to which patients with suspected venous thromboembolism (VTE) carry sufficient risk to justify

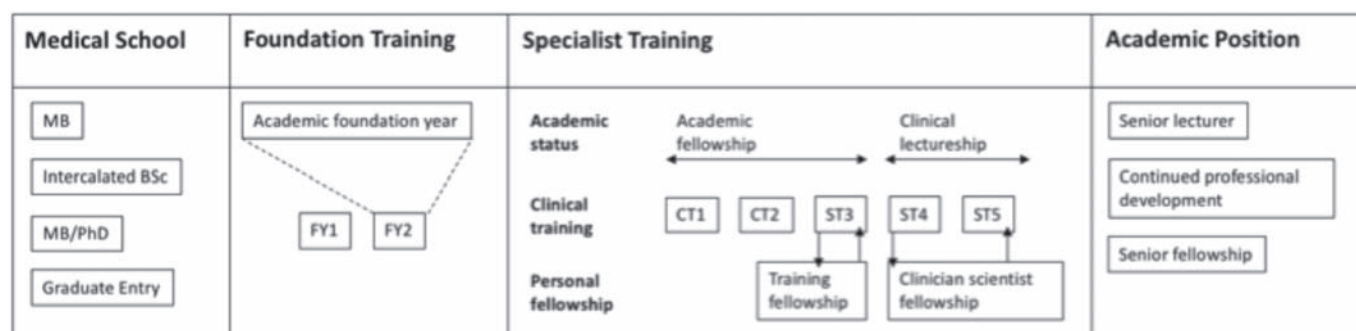


Figure 1: The Integrated Academic Training Pathway.

imaging (e.g. Doppler ultrasound, CT pulmonary angiogram) involves clinical judgment, tools such as the Wells score, and in low-risk cases a D-dimer test.

A negative D-dimer result is able to successfully rule out VTE in low-risk cases because the test has high sensitivity. However, D-dimer has a low specificity, especially with advancing age. Recent studies have suggested a potential improvement in specificity with novel 'age adjusted' cut-off points for the test.

In this retrospective diagnostic cohort study we reviewed the clinical notes of patients >50 years old who were evaluated for VTE and demonstrated a positive D-dimer between January and December 2016. There were 2132 positive D-dimer results and 1236 patients underwent imaging. Of these, 314 (25.1%) results could have been avoided if an age-adjusted cut-off had been applied. To date no index cases have missed.

In patients with suspected VTE, the application of age-adjusted D-dimer cut-off appears to increase the proportion of patients in which VTE can be excluded without the need for imaging. This may be associated with clinically-important reductions in anticoagulation, investigations, cost and time.

Dr Ciara Carpenter, Doctoral Research Fellow in Medical Education, LTH & LMS

Studies have shown that medical students do not feel prepared to practice as a doctor once they graduate. This mixed methods, two-phase study conducted over two years aims to determine what type of simulation is most effective to prepare medical students for practice and the reasons for this, comparing two different simulation formats. Questionnaire and interview data were collected from students and stakeholders at two phases; immediately after the simulation, and 6 months later when the student participants are qualified doctors. The GMC found that overall 70% of new FY1s felt prepared for practice; preliminary results compared favourably, with 74% of students feeling prepared. Students have reported feeling unprepared for prescribing, non-technical skills, and dealing with acutely unwell patients. This is not supported by this study with high levels of preparedness for all competencies in these areas except 'leading a team' and 'adapting to changing circumstances and uncertainty'.

Doctoral Award-Winner: *Dr Daniel Darbyshire, Doctoral research fellow in Emergency Medicine, LMS*

Retention of doctors in emergency medicine is a problem in the NHS and was recently identified as a priority by the James Lindt Alliance. This is part of a complicated picture in which recruitment and retention of emergency medicine doctors is related to broader staffing issues in emergency care. I am studying this problem with three interlinking workstreams. First is a review of the literature comprising a scoping review of academic and grey literature directly pertaining to retention supported by a more limited review of the broader literature. Second, I will use ethnographic methods – participant observation and informal interviewing – in two emergency departments to try and understand the interaction between individual, culture and environment and how this pertains to retention. Finally, I will interview a purposive sample of

individuals from both research sites and from institutions with an interest or influence on retention.

Highly Commended: *Dr Jack Dover, Academic Foundation Year 1 Doctor, ELHT*

LGBT (lesbian, gay, bisexual, transgender) people in the UK continue to experience discrimination, harassment and prejudiced attitudes. Previous research indicates these experiences are prevalent for LGBT doctors in the workplace and that senior clinicians are often the sources of these negative experiences. What are the experiences of LGBT Foundation Doctors working in one NHS Trust and what are the awareness, attitudes and practices of senior medical leaders towards challenges their LGBT junior colleagues may face?

Mariam Gaddab, Medical Student, Lancaster Medical School

Until recently international public health initiatives mainly focused on communicable diseases, with little if any consideration of global surgery. The Lancet commissioned a report Global Surgery 2030 which addressed a range of issues including the increased interest from surgeons and surgical trainees from around the world, especially from High-Income Countries (HIC) working in Low Middle Income Countries (LMIC). However, due to extreme shortages in resources and significant differences in cultural and moral beliefs in some LMIC, visiting surgeons and trainees face professional, legal and ethical challenges. This dissertation aims to highlight these challenges and explore current guidance available for tackling such dilemmas. As yet, guidance from the General Medical Council (GMC) and the British Medical Association (BMA) has not adapted to the growth of this novel international field resulting in a lack of adequate guidance for surgeons and/or wanting to work in LMIC. Future guidance from the GMC and BMA needs to reflect the challenges facing surgeons and trainees and take into consideration the different environment in LMIC. Building strong international relationships through institute collaborations could create a platform for communication which could address the differences in practice and help with understanding some of the dilemmas in global surgery.

ACF Award-Winner: *Dr Sophie Hancock, Academic Clinical Fellow in Palliative Medicine, LMS*

Background: Telehealth has been proposed as a solution to meeting the needs of the growing palliative care population. A 2010 review highlighted that there was an awareness of telehealth in palliative care but a lack of evidence-based research to support its use.

Methods: Databases were searched using pre-defined terms along with hand searching of conference literature and thesis databases. Screening of title and abstract followed by full text review and data extraction was conducted by two reviewers.

Results: 3807 records were screened resulting in 30 included studies. A variety of telehealth applications were described with the number of home telemonitoring initiatives increasing from the 2010 review. Other studies aimed to support patients and carers through telephone or video advice lines.

Conclusion: There has been an increase in the number of telehealth interventions for palliative care in the UK, however there remains a lack of evaluation of these services.

Dr Joel Handley, Academic Clinical Fellow in Neurology, LMS

We investigated the association between white matter lesion volume (WMLV) and grey matter volume loss in Alzheimer's disease using the ADNI II database for 95 cognitively impaired and 66 control individuals. WMLV was quantified from FLAIR and T1 images. We found associations between baseline grey matter volume and Alzheimer's pathology ($\beta = -2.08$, $p = 0.051$), log2 WMLV ($\beta = -0.36$, $p = 0.054$), age ($\beta = -0.10$, $p = 0.015$) and gender ($\beta = 1.84$, $p = 0.0002$). A borderline-significant interaction between log2 WMLV and Alzheimer's pathology ($\beta = -0.43$, $p = 0.053$) was also noted, indicating a super-additive effect of cerebrovascular disease and Alzheimer's disease on grey matter volume. Longitudinal change in grey matter volume over two years was significantly associated with Alzheimer's pathology ($\beta = -2.88$, $p = 0.048$) and log2 WMLV ($\beta = -0.51$, $p = 0.047$)

Dr Bradley Lonergan, Academic Foundation Year 2 Doctor, MBHT

Decision-making on Intensive Care Unit (ICU) is highly pressured because critically unwell patients are likely to die if treatment is withdrawn or withheld. Intensivists will often use time to observe how patients respond to initial treatment to predict their prognosis. However, this subjective assessment is not widely acknowledged in literature or guidelines. What are the roles of time on ICU and can it aid decision-making for intensivists?

In our qualitative study of eighteen intensivists and ICU nurses, we found multiple roles for time: as a decision-making aid, a message, a gift, a commodity, a resource, a connection and as evidence. We propose that intensivists become more aware of the roles of time, in order to clarify the goals of treatment for patients and their families. Adopting Time-Limited Trials would be a novel way of formalising the benefits of time as a decision-making aid and prevent unnecessary treatment prolongation.

Dr Mark Maskery, Academic Clinical Fellow in Neurology, LMS

Glucagon like peptide-1 receptor agonists (GLP-1RAs) are safe and efficacious in the management of type 2 diabetes mellitus. There is increasing interest in their neuroprotective benefits and novel dual agonists such as DA4-JC combine GLP-1RAs with glucose insulinotropic polypeptide (GIP).

As part of a larger study, APP/PS1 mice were treated with daily intraperitoneal saline, 0.1, 1 or 10nmol/kg of DA4-JC for 6 weeks prior to being sacrificed and compared with wild type. Immunohistochemistry and microscopy were performed to count amyloid plaques on coronal 30m cortical sections.

One-way ANOVA determined a statistically significant difference between groups ($F(4, 94)=18.98$, $p<0.0001$). A Tukey post-hoc analysis revealed that the plaque count was significantly lower in the APP/PS1 groups when treated with 1nmol/kg or 10nmol/kg.

No significant difference was shown with 0.1nmol/kg treatment compared to saline.

Our results are in keeping with larger studies investigating the neuroprotective effects of GLP-1RAs in models of Alzheimer's Disease.

Dr Lara Rimmer, Academic Foundation Year 1 Doctor, ELHT

The prevalence of elevated intra-hepatic fat (IHF) is increasing in the Western world, either alone as hepatic steatosis (HS) or in conjunction with inflammation (steatohepatitis). These changes to the hepatic parenchyma are an independent risk factor for post-operative morbidity following liver resection for colorectal liver metastases (CRLM). As elevated IHF and colorectal malignancy share similar risk factors for development it is unsurprisingly frequent in this cohort. In patients undergoing resection IHF may be elevated due to excess adiposity or its elevation may be induced by neoadjuvant chemotherapy, termed chemotherapy associated steatosis (CAS). Additionally, chemotherapy is implicated in the development of inflammation termed chemotherapy associated steatohepatitis (CASH). Following cessation of chemotherapy, patients awaiting resection have a 4-6 week washout period prior to resection that is a window for prehabilitation prior to surgery. In patients with non-alcoholic fatty liver disease, dietary and pharmacological interventions can reduce IHF within this timeframe but this approach to modifying intra-hepatic fat is untested in this population.

LIVERPRIME is a three-phase study to ultimately show whether prehabilitation using diet can reduce IHF prior to hepatic resection. Phase I, tested on 10 healthy volunteers, demonstrated the use of CS-MR as an accurate method of determining IHF. Phase II will observe IHF at Week 0 and Week 4 following chemotherapy, without intervention. The aim is to demonstrate changes within the washout period without any modification.

Dr Cliff Shelton, NIHR Doctoral Research Fellow in Anaesthesia, LMS

Surgical repair is required to restore mobility and treat pain after hip fracture. But what is a good anaesthetic for the frail elderly patients who sustain this injury? Meta-analyses indicate equipoise between spinal and general anaesthesia, and anaesthetic practices appear to vary widely between hospitals.

In this ethnography I observed the hip fracture work of anaesthetists in three different hospitals. My data yielded four themes: in 'a good anaesthetic... happens today' surgery is expedited in challenging circumstances, requiring a nuanced appreciation of risk and benefit. In '... handles uncertainly' anaesthetists account for an equivocal evidence-base and patients' unclear medical histories. In '... treads lightly' the ways of accomplishing 'minimally-invasive anaesthesia' are considered and the way we describe anaesthesia is questioned. In '... goes unnoticed' patients' experiences of anaesthesia and its complications are explored.

This study re-frames the debate surrounding hip fracture anaesthesia by focusing on how and why anaesthesia is provided.



Presentations of the 'three minute thesis' awards. From left to right: Jack Dover (highly commended), Sophie Hancock (academic clinical fellow award winner), Amy Gadoud, Dan Darbyshire (doctoral award winner), and Liam Barrett (academic foundation award winner).

Dr Lauren Whittham, Doctoral Research Fellow in Gynaecology, LTH & LMS

The aim is to produce a pre-operative outcome prediction model for gynaecological oncology patients. Patients over 65 years or with multiple comorbidities currently undergo a cardiopulmonary exercise test (CPET) pre-operatively. CPET is used to assess how patients cope with stresses of major surgery, help plan care and guide if HDU support is warranted.

The pre-operative prediction model will be created using retrospective data from previous CPET studies and patient records for those previously cared for by LTHTR. This data will be inputted into a forward feature extraction classification algorithm, built and validated based on known clinical outcomes, and be used on a prospective cohort of patients.

Patient serum, urine and mouth swabs will also be analysed to assess if they can be incorporated into the model to improve patient outcome following surgery.

The hope is to create a prediction model to be used in conjunction with CPET to better guide patient care and ultimately improve patient outcome.

Dr Henry HL Wu, Academic Foundation Year 2 Doctor, MBHT

The Helsinki Declaration on Patient Safety was launched in 2010 by the European Society of Anaesthesiology and the European Board of Anaesthesiology, providing a vision statement with practical standards designed to improve safety. Despite some evidence of uptake, and widespread global endorsement, it is not clear to what extent the Declaration has influenced the practice of patient safety across Europe. We therefore invited members of the European Society of Anaesthesiology in 38 European countries to take part in an online survey to explore their understanding of the Declaration and compliance with its standards.

There was a generally low response rate of 22.7%. Response rates were higher from countries where national anaesthesiology societies encouraged their members to take part. Common themes from the results concluded that there were high levels of adherence to core monitoring standards and widespread use of the WHO Safe Surgery Checklist. Improvements are still required regarding annual reporting of patient safety standards and critical incident reporting systems. Going forwards,

most respondents feel that full implementation of the declaration practically in day-to-day practice is more important and should be prioritised over possible changes to its content.

Recent and future developments in Academic Clinical Training at Lancaster

In the 12 months since our last symposium, there have been two appointments to support academic clinical training at Lancaster; Dr Amy Gadoud has been appointed to the role of ICAT lead and Beth Whittaker, project manager at LMS has formally added the support of academic clinical trainees to her responsibilities.

Our objectives for the next year include the establishment of an increased online presence for the Lancaster academic clinical trainees programme, through the development of a new website and social media accounts which will be used to promote our outputs and achievements and provide easily-accessible information for those who are interested in academic clinical training at Lancaster, either as trainees or prospective supervisors

Pending the release of our new online resources, recruitment details for ACFs are available via the HENW website <https://www.nwpgmd.nhs.uk/nih-academic-clinical-fellowships-glance>. The process for applications to the AFP are explained at <http://www.foundationprogramme.nhs.uk/pages/fp-afp/how-to-apply/academic-training>. It should be noted that although the recruitment window for the AFP is the same as for other foundation programme posts, ACF applications must be submitted at an earlier time than other core and speciality posts, typically October – November.

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