Academic Clinical Fellowship in Neurology

Description of ACF Programme:
Title: Neurology Duration: 3 years
Lead NHS Hospital/Trust and contact details:
University Hospitals Southampton NHS Foundation Trust Department of Neurology Wessex Neurological Centre Southampton General Hospital Southampton SO16 6YD Professor Ian Galea Professor in Clinical & Experimental Neurology and Honorary Consultant Neurologist I.Galea@soton.ac.uk
Research Institution in which training will take place:
Name: University of Southampton Address: Clinical Neurosciences, Clinical & Experimental Sciences Faculty of Medicine, University of Southampton Mailpoint 806, Level D Southampton General Hospital Southampton SO16 6YD UK and Wessex Neurological Centre University Hospitals Southampton Southampton Possible rotations to Poole General Hospital, Poole and Queen Alexandra Hospital, Portsmouth
Arrangements for protected research time:
The post will cover two years and three months of clinical training and nine months of protected research time will be used to learn research methodology and prepare for a Clinical Research Fellowship (Doctoral Training) application for a higher degree. Clinical

duties will be back-filled. The job description will ensure protected research time for the ACF. The exact arrangement for protected research time, that is whether this will be in blocks or as a weekly split, and its timing, will be arranged between the trainee, Programme Director and the Academic Supervisor, and will depend on the following variables: clinical experience of the trainee, service needs, trainee needs, timing and full/part-time equivalent of clinical cover.

Research Objectives:

The objectives of the training programme are for the trainee, over three years:

1. To undertake the equivalent of 27 months of full-time specialist training in medical neurology in accredited hospital posts and a total of nine months within Clinical Neurosciences in the University of Southampton Faculty of Medicine over a three year period.

2. To undertake generic research methods training through a programme run by the Faculty of Medicine's NIHR Postgraduate School.

3. To obtain relevant training in research design, methods and systematic review.

4. To gather preliminary data and develop a research proposal for an externally funded Clinical Research Fellowship (Doctoral Training).

5. To submit such an application for a Clinical Research Fellowship (Doctoral Training) in national competition such as Medical Research Council, Wellcome Trust, National Institute of Health Research, Alzhiemer's Research UK, Multiple Sclerosis Society, Health Foundation & Cancer Research UK.

6. To present preliminary data in national / international conferences and possibly publish such data in high impact journals.

Description of research component of programme (up to 500 words):

The ACF will join an ongoing research programme led by Professor Ian Galea and Associate Professor Aravinthan Varatharaj, studying modifiable biological processes impacting the progression of neurological conditions associated with cognitive dysfunction and dementia. They will build on the group's strengths and international success in inflammation, blood-brain barrier biology and imaging.

During the ACF, the post-holder will study the influence of processes such as blood-brain barrier function, inflammation and haemolysis in one of these neurological conditions: multiple sclerosis, subarachnoid haemorrhage, paraneoplastic neurological disease, Alzheimer's disease, head injury and the neurological manifestations of sickle cell disease. A number of techniques are available in the group and the post-holders will be

trained as required. We are the first centre in the world to develop and validate a three-dimensional magnetic resonance imaging method to quantify blood-brain barrier permeability in humans, and are currently developing the application of spatial semi-parametric statistical modelling to quantitative neuroimaging. In the laboratory, the post-holders will take advantage of laboratory assays we have established to measure mild systemic haemolysis in collaboration with industry (Sysmex and RR Mechatronics), and a high throughout method to quantify systemic inflammation in humans, currently in use in five longitudinal studies. The post-holder will be able to extend their *in vivo* observations and study them in further detail at the tissue and molecular level using biological samples or post-mortem brain tissue. The post-holder may select clinical, translational or laboratory aspects of the research programme. Examples include projects examining the role of neurovascular integrity and extracellular haemoglobin toxicity in various neurological conditions, new mass spectrometry-based diagnostics in multiple sclerosis to guide CAR-T cell therapies, unbiased discovery of blood-brain barrier permeability associated molecules, T cell modulation in paraneoplastic neurological disease, iron chelation in superficial siderosis, preclinical and genetic studies in subarachnoid haemorrhage, and clinical trials based on the above.

The group has strong collaborative links with international leaders and resources in: (1) inflammation and dementia within the Interdisciplinary Dementia and Ageing Centre and associated clinical cohorts; (2) tissue samples (BRAIN UK); (3) mathematics and biostatistics (Professor Zudi Lu, Hong Kong); (4) tracer kinetic modelling (Professor Henrik Larsson's group, Copenhagen); (5) traumatic brain injury (TBI-Reporter); red blood cell disorders and molecular haematology (Dr Noemi Roy, Oxford).

The research programme benefits from a strong partnership between the University and Trust, embodied within the Southampton Centre for Biomedical Research. Joint working and clinical research is further facilitated by co-location of the Faculty of Medicine laboratories and offices on the main hospital site. The Trust's tertiary neurology service provides a vast population base to recruit patients with neurological conditions, while the University provides support with research instrumentation and laboratories necessary to analyse biosamples and/or post-mortem tissue. Research neuroimaging infrastructure is jointly managed by the two institutions, and the University has ring-fenced access to MRI on the hospital site. The partnership has been essential to establish contracts and collaborations with industry which needed access to a combination of clinical and laboratory resources.

Description of clinical component of programme (up to 500 words):

The clinical component of the training is based at the Wessex Neurological Centre, which is a major regional neurosciences centre also providing Neurosurgery, Neuroradiology (including Interventional), Neurophysiology and Neuropsychology specialist input. General Neurological training is offered in the setting of a District General Hospital as well as within the Regional Centre. Broad experience in the neurosciences is provided by virtue of a "hub and spoke" principle in the provision of neurological service and the presence of a major neurosurgical centre.

One year of the training programme will be spent at a DGH currently Poole Hospital or Queen Alexandra Hospital, Portsmouth. There is a comprehensive range of specialist services in the neurological sub-specialties.

Continuous training in general neurology is provided throughout the programme. Trainees will attend general neurology clinics and additional sub-specialty clinics. They will also receive training in outpatient procedures such as botulinum toxin injections, greater occipital nerve block and needle muscle biopsy.

The neurological in-patient service is divided into work-based roles. These cover: stroke, acute neurology liaison, senior registrar, neurology ward and short stay cover, sabbatical and research. Trainees will rotate between these roles. The senior registrar and sabbatical roles are available to trainees in their last two years of training. The on-call rota provides additional acute neurology experience.

In certain sub-specialties continuous training is given throughout the programme. Trainees will be expected to participate in specialist clinics in stroke, neuromuscular diseases, multiple sclerosis and epilepsy as well as general clinics. In particular, trainees attend weekly meetings in neuroradiology and have regular exposure to neuropathology and neuro-physiology.

Continuous training is provided in the neurosciences at the weekly combined neurosciences half-day meetings. Trainees are expected to present cases at grand rounds and to attend presentations in research and by visiting speakers. There is a comprehensive monthly teaching programme shared with trainees from HEE Thames Valley.

Trainees will be involved in audit and quality improvement projects throughout the programme and expected to present their results at the academic half-day meeting.

In addition to training in general neurology, the programme allows for career development on a year by year basis:

- Attachment to sub-specialties including neurophysiology, neurosurgery and neurorehabilitation
- The Wessex Regional Muscle and Nerve Service (WERMANS) provides training in all neuro-muscular diseases, including interpretation of nerve and muscle biopsies, from the Wessex Neurological Centre at University Hospital Southampton
- Increasing clinical responsibility for the provision of a ward referral service within the University Hospital Southampton NHS Foundation Trust
- A sabbatical period in the last two years of training (trainee numbers permitting)

The training programme is for five years and the trainee would be expected to cover all subspecialty training as per neurology curriculum.

Junior Doctors hours are constantly under review throughout all hospitals in Wessex; on call / shift commitments are therefore subject to change. Banding arrangements may differ as individual Trusts determine rotas at local level. Full details of banding are available from the Medical Personnel Department of the relevant Trust.

Specific support provided to trainee

- Experience in a Consultant led clinical service, exposing the trainee to a wide variety sub-specialties.
- Excellent Clinical, Educational and Academic Supervision.
- A programme of organised neurology curriculum teaching has been arranged through the Wessex Courses Centre in the Postgraduate Dean's Office. There are monthly sessions which are attended by trainees from HEE Thames Valley. The course follows the National Curriculum of the ABN and takes place in Southampton or Oxford alternately.
- Subspecialty Training and Career Development with attachments or clinic attendance in the following specialties: district hospital neurology, neurophysiology, medical liaison role, vascular disease, movement disorders including botulinum toxin administration, cognitive disorders, neurogenetics, peripheral nerve, multiple sclerosis, epilepsy, myasthenia, muscle disease, neurological rehabilitation, neuroradiology including interventional neuroradiology, neurosurgical procedures on appropriate cases, intensive care neurology. Length of attachment and service commitment will vary between these specialties. Acquisition of clinical competency will always be at the centre of these attachments / attendances.
- Study leave.
- Training in setting up new studies and/or clinical trials, governance and management.
- Interaction with researchers leading the edge in their area and ability to choose a project to their best fit.
- Ability to attend a range of courses applicable to research methodology.

- Academic meetings held in the Clinical Neurosciences Division and the Wessex Neurological Centre, including joint meetings.

Milestones and timing of achievement of academic and clinical competencies

The exact milestones and timing of achievement of clinical competences will vary depending on the stage on the clinical experience and stage of training of the ACF when they start the post. The acquisition of clinical competencies and progression through the ARCP will not be different from that of a non-academic post during the 27 month clinical component of the ACF.

With respect to academic milestones and timing of achievement, these are broad guidelines since exact timing of achievement will depend on how time is split between clinical and research time (ie one block, several blocks or split weeks):

Year 1	
1.	Identification of topic of interest for research project, additional research supervisors if necessary and initial literature review.
2.	Identification of specific learning needs for the project and appropriate courses.
3.	Attendance at appropriate NIHR Training Programme courses and meetings.
Year 2	
1.	Academic competencies in utilising current software for database building, statistical analyses and reference management; understanding principles of data handling, confidentiality and sharing for pilot study data collection; processing, cleaning & analysis of data in collaboration with existing studies; submitting applications within the research governance framework.
2.	Obtaining ethical committee and NHS Research & Development proposals for exploratory project if required.
3.	Sample collection.
4.	Data collection / analysis.
5.	Attendance at relevant internal and external training courses.

Year 3	
1.	Data analysis.
2.	Application for Clinical Research Fellowship (Doctoral Training).

How post links in to the NIHR approved Research Training Programme at your locality:

Mandated attendance at NIHR training programme courses provided by the Faculty covering aspects such as trial design, GCP, statistics, grant and paper/abstract writing, time management etc. Attendance and presentation at host Academic Trainees meetings.

Trainee centredness:

The trainee will have a personalised academic training plan that articulates with the clinical training plan, facilitated by regular liaison between the trainee, Academic Supervisor, Educational Supervisor and Programme Director. Academic representation on ARCP panels will be ensured. The trainee will meet regularly with their Academic Supervisor to ensure that goals are being met in addition to regular Educational Supervisors meetings. The trainee will be encouraged to develop their own project within the academic group's research programme, helped by close supervision. Integration of subspecialist clinical skills and research topic will be encouraged and facilitated.

Quality assurance of the programme:

- Regular review from Academic Supervisor, reporting to the Head of the Unit and Academic Training Lead for University.
- Feedback from Clinical and Educational supervisors
- Successful transition at ARCP and feedback from Programme Training Director
- Completion of NIHR courses and course work through accredited modules where applicable
- Academic outputs of trainee including presentations, posters and papers
- Submission of application for a Clinical Research Fellowship (Doctoral Training)
- Success in the Clinical Research Fellowship (Doctoral Training) application

Mentoring Arrangements:

Trainees will be invited to identify one or more mentors from the University of Southampton's Faculty of Medicine Mentoring Scheme which also hosts an online Database of approved mentors within the Faculty. There are governance arrangements in place for supporting postgraduate students within the Faculty.

Academic Lead (University) for the IAT Programme:
Name: Professor Elaine Dennison Position: Professor of Professor of Musculoskeletal Epidemiology Address: MRC Lifecourse Epidemiology Unit Southampton University Southampton General Hospital Southampton SO16 6YD UK Telephone: 02380777624 Email: emd@mrc.soton.ac.uk
Academic Supervisor (University) Details:
Name: Professor Ian Galea Position: Professor of Clinical & Experimental Neurology Address: Clinical Neurosciences, Clinical & Experimental Sciences Faculty of Medicine, University of Southampton Mailpoint 806, Level D Southampton General Hospital Southampton SO16 6YD UK Email: I.Galea@soton.ac.uk
Education Supervisor (Trust) Details:
Name: TBC

Position: Consultant Neurologist Address: Wessex Neurological Centre Mailpoint 101 Southampton General Hospital Southampton SO16 6YD Telephone: 02380 777222 Email: TBC
Clinical Supervisor(s) Details:
Clinical supervision will be provided by the Consultant Neurologists working at the Centre or in the District General Hospital depending on the clinical attachments during the ACF.
Deanery Programme Training Director Details:
Name: Dr Julian Furby Email: Julian.Furby@uhs.nhs.uk
Deanery Programme Manager Details:
Name: James Pillinger Position: Education Programme Manager Email: england.medicine.wx@nhs.net
Confirmation that ACF posts attract an NTN(a):
This post will attract a NTN.