The COVID-Neuro Network
Individual Patient Data Meta-Analysis

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Programme

• Tom Solomon
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Walton Centre NHS Foundation Trust
Established 2010
Director 2010-17

Improving the health of humans and animals by tackling key infectious disease in both a UK and global context
NIHR Health Protection Research Unit (HPRU) in Emerging and Zoonotic Infections (EZI)
Since 2014

Ebola  Zika  Covid-19
£43M (US$56) in research funding

Liverpool Brain Infections Group

30 members

Epidemiology
Clinical studies
Diagnostics
Host Response
Therapeutics

Lance Turtle
Senior Clinical Lecturer

Mike Griffiths
Senior Clinical Lecturer

Benedict Michael
Senior Clinical Lecturer

Fiona McGill
Clinical Lecturer

Laura Benjamin
Clinical Lecturer

Sylviane Defres
Hon Sen Clinical Lecturer

Lance Turtle
Senior Clinical Lecturer
Neurological Infectious Diseases in Liverpool

- Liverpool Brain Infections Research Group
  - Since 2003
- Neurological Infectious Diseases Course
  - Since 2007
- Neurological Infectious Diseases Clinic
  - Since 2005
- Joint Inpatient Rounds
- Joint Outpatient Consults
Welcome to Brain Infections UK, a group of new clinical research studies aiming to improve our understanding of potentially debilitating infections that can affect the brain such as encephalitis, meningitis and HIV. These conditions have a tremendous impact on the quality of life of large numbers of people in the UK, but until now there has been little research done to try and tackle this.

Our studies cover brain infections in both adults and children and bring together leading experts with a range of specialisms including neurology, infectious diseases, acute and emergency medicine, medical microbiology and virology.

### Current Studies
- **Enceph UK** (341 patients recruited)
- **UK-ChiMES** (3009 patients recruited)
- **UK Meningitis** (1870 patients recruited)
- **Partition** (225 patients recruited)
- **UK TB Meningitis** (360 patients recruited)
- **BASICS** (1606 patients recruited)
- **DexEnceph** (12 patients recruited)

(Recruitment figures updated 03-10-2017)

### Publications and Outcomes
- **The Interleukin-1 Balance During Encephalitis Is Associated With Clinical Severity, Blood-Brain Barrier Permeability, Neuroimaging Changes, and Disease Outcome.**
- **Characteristic Cytokine and Chemokine Profiles in Encephalitis of Infectious, Immune-Mediated, and Unknown Aetiology.**
- **The UK joint specialist societies guideline on the diagnosis and management of acute meningitis and meningococcal sepsis in immunocompetent adults.**
International Collaborations

- University of Oxford-Wellcome Trust Clinical Research Unit, Centre for Tropical Diseases, Ho Chi Minh City (since 1994)
- Armed Forces Research Institute of Medical Sciences (AFRIMS), Bangkok, Thailand (since 1994)
- Institute of Health and Community Medicine, Universiti Malaysia Sarawak, Malaysia (Since 1997)
- University of Texas Medical Branch, Galveston, Texas (since 2001)
- Queen Elizabeth Hospital, Blantyre, Malawi (since 2003)
- National Institute for Mental Health and Neurological Science (NIMHANS), Bangalore, India (since 2004)
- Centres for Disease Control Atlanta, and Colorado, Texas (since 2007)
- Kanti Children’s Hospital, Kathmandu, Nepal (since 2009)
- Indian Institute for Science, Bangalore (2009)
- John Hopkins Baltimore, USA (2009)
- Washington University St Louis, USA (2009)
- Lerner Research Institute, Cleveland, Ohio (2010)
Causes of encephalitis and differences in their clinical presentations in England: a multicentre, population-based prospective study

Julia Grantrod, Helen E Ambrose, Nicholas W S Davies, Jonathan P Clewley, Amanda L Walsh, Dilya Morgan, Richard Cunningham, Mark Zuckerman, Ken J Mutton, Tom Solomon, Katherine N Ward, Michael P T Lunn, Sarosh R Imani, Angela Vincent, David W G Brown, Natasha S Crowcroft, on behalf of the UK Health Protection Agency (HPA) Aetiology of Encephalitis Study Group

Summary

**Background** Encephalitis has many causes, but for most patients the cause is unknown. We aimed to establish the cause and identify the clinical differences between causes in patients with encephalitis in England.

**Methods** Patients of all ages and with symptoms suggestive of encephalitis were actively recruited for 2 years (staged start between October, 2005, and November, 2006) from 24 hospitals by clinical staff. Systematic laboratory testing included PCR and antibody assays for all commonly recognised causes of infectious encephalitis, investigation for less commonly recognised causes in immunocompromised patients, and testing for travel-related causes if indicated. We also tested for non-infectious causes for acute encephalitis including autoimmunity. A multidisciplinary expert team reviewed clinical presentation and hospital tests and directed further investigations. Patients were followed up for 6 months after discharge from hospital.
513 children with suspected CNS infection
  Excluded bacterial
  94 (18%) died.
163 (32%) had *P. falciparum* parasitaemia, of whom
  34 died;
133 (26%) had at least one virus detected in the
  central nervous system (CNS) by polymerase chain
  reaction (PCR), with 43 deaths.
Twelve different viruses were detected,
  adenovirus most common (42 patients).
45 (9%) children had both parasitaemia and viral
  infection;
  27 (35%) of 78 diagnosed clinically with cerebral
  malaria.
Enterovirus 71 is an important cause of CNS disease in Asia.

Solomon et al, Lancet ID, 2010
Ooi et al, Lancet Neurology 2010
Neurological disease associated with Zika and chikungunya viruses in adults Brazil

Of 35 patients studied, 22 had evidence of recent arboviral infection. Twelve had positive PCR or IgM for Zika. - 5 of these coinfectected with Chikungunya virus.
Japanese Encephalitis Clinical Care Guidelines

Home

Brain Infections Global: An NIHR Global Health Research Group on Improving the Management of Acute Brain Infections

Acute brain infections are major causes of illness and death globally, partly through shortage of expertise in tackling them. In many settings, the causative organisms are not determined because of failures in diagnosis, so that treatment has to be guessed at, and is often wrong.
NIHR Global Health Research Group on Brain Infections

- College of Medicine (CoM), Malawi
- Malawi-Liverpool-Wellcome Trust Unit, (MLW) Malawi
- Oswaldo Cruz Foundation, (FioCruz) Recife, Brazil.
- National Institute for Mental Health & Neuroscience (NIMHANS), Bangalore, India
- Christian Medical College (CMC), Vellore, India
- University of Liverpool – Institute of Infection and Global Health
- Liverpool School of Tropical Medicine
- Warwick Centre for Applied Health Research and Delivery
Brain Infections Global
A global network and community of practice for research in acute brain infections, embedded within The Global Health Network

- 19,000 visitors and 1800 members
- From across the world
- Top 5 countries:
  1) UK
  2) India
  3) Brazil
  4) Kenya
  5) Nigeria
- Learning, joining events and accessing resources
- And over 2900 e-learners taking Neuro-ID online courses
- Including over 500 new users in the past 2 weeks
- With COVID-Neuro Resources accessed by over 1000 people to date

Visit braininfectionsglobal.tghn.org
Latest COVID-Neuro resources freely available

Brain Infections Global

COVID-Neuro Resource

Brain Infections Global is providing here links to resources on the neurological aspects of COVID-19. (List updated: 04/06/2020.) Through the COVID-Neuro Network we are also providing access to case record forms and standardised case definitions.

1. Neurological disorders associated with COVID-19 (peer reviewed articles)
2. Neurological disorders associated with COVID-19 (articles awaiting peer review)
3. Other useful COVID-19 resources
4. OTHER ORGANISATION’S COVID-19 NEUROLOGY WEBSITES
5. Neurological disorders associated with other coronaviruses
6. Neurological disorders associated with other respiratory viruses
Join our network

COVID-Neuro Network

Welcome to the COVID-19 Neuro Network, an international collaboration part of Brain Infections Global, led by the Liverpool Brain Infections Group from the University of Liverpool. The overall aim of Brain Infections Global is to improve the diagnosis of acute brain infections in adults and children in low and middle income countries (LMIC), to guide treatment and improve outcomes. We also work to develop and support research capacity among partners.

In response to the COVID-19 global pandemic, we have developed resources that enable data collection for patients with neurological complications of COVID-19, to support clinicians internationally. Please register with the network by completing the following form to receive access to these resources for free. Following registration, you will receive an email containing your case report form (CRF) and standardised case definitions, which...
The COVID-Neuro Network is an international collaboration that is part of Brain Infections Global (https://braininfectionsglobal.tghn.org/), led by the Liverpool Brain Infections Group from the University of Liverpool. The overall aim of Brain Infections Global is to improve the diagnosis of acute brain infections in adults and children in low and middle income countries (LMIC), to guide treatment and improve outcomes. We also work to develop and support research capacity among partners.

In response to the COVID-19 global pandemic, we have developed this CRF to enable data collection for patients with neurological syndromes that may be related to COVID-19, to support clinicians internationally. Thank you for registering with the COVID-Neuro Network and accessing this form. If you have not registered, please do so at https://www.liverpool.ac.uk/covid-neuro-network/. Through our network, we aim to standardise data collection and facilitate subsequent comparison and sharing of information, and will be in touch with you about how we can do this, so that ultimately we strengthen the global COVID-19 research response.

Note: This is CRF v2.2 29/04/2020. All members registered with the COVID-Neuro Network will be sent any updated versions of the data collection tool.
Neurological Associations of COVID-19
(The Lancet Neurology, IN PRESS)
Coronavirus: Scientists use genetic code to track UK spread

Prof Hisco's team are using MinIOK, a hand-held sequencer developed by Oxford Nanopore Technologies.

Scientists are analysing the unique genetic code of individual samples from infected patients to track how the coronavirus is spreading across the UK.

Each sample of its genetic material, RNA, reveals another step in the chain of infections - who infected whom.

University of Liverpool scientists can also identify other viruses and bacteria in patients' throat swabs.

And this may help explain why some patients with no known underlying health conditions become seriously ill.
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  • Facebook
• YouTube: tsolomon66
ACTION
• Sign Up to the IPD on Survey Monkey:
  • https://www.surveymonkey.co.uk/r/GPY5RH3
• Complete the Data Sharing Agreement
• Complete the Data Collection Case Record Form
  • Patients already published
  • Patients not yet published
• Recruit your Friends to the IPD Meta-analysis
• Join Brain Infections Global
  • https://braininfectionsglobal.tghn.org