Introduction and welcome

We are delighted to welcome you to Topics in Infection 2016; we do hope you enjoy the day and find the sessions worthwhile and informative.

For more information on our meetings and on the benefits of joining RSTMH, please visit www.rstmh.org.

If you would like to be kept informed of RSTMH meetings and events please register for free on our website and/or follow us on Twitter @RSTMH.

Finally, many thanks to all our speakers and delegates, many of whom have travelled long distances to be with us today.

We look forward to seeing you again soon!
Programme

09:00  Morning refreshments and registration
09:20  Welcome, Dr Simon Cathcart, RSTMH President

Session 1 Chair: Dr Simon Cathcart

09:30  Towards the global eradication of yaws
Dr Michael Marks, London School of Hygiene & Tropical Medicine

10:10  Strategies to reverse the neglect of tropical snakebite victims
Dr Robert Harrison, Liverpool School of Tropical Medicine

10:50  Coffee break

Session 2 Chair Professor Sarah Rowland-Jones

11:20  Challenging Parasites. A Hospital for Tropical Diseases Production. Directed by Peter L Chiodini. Coming shortly to a theatre near you.
Professor Peter Chiodini, University College London

12:00  Meningococcal disease and new vaccine programmes
Dr Shamez Ladhani, Public Health England

13:00  Lunch

Session 3 Chair: Dr François van Loggerenberg

13:30  Ebola: recent case management experiences in Glasgow
Dr Emma Thomson, University of Glasgow

14:10  Ebola: experimental therapies and UK preparedness
Dr Michael Jacobs, Royal Free Hospital

14:50  Coffee break

Session 4 Chair: Professor Armine Sefton

15:20  ‘To walk bent over’: an update on the worldwide Chikungunya epidemic
Professor Sarah Rowland-Jones, University of Oxford

16:00  Resurgence of scarlet fever in the UK
Dr Theresa Lamagni, Public Health England

16:40  Advances in RSV vaccine development: translating experimental findings to clinical trials
Dr Maximillian Habibi, Imperial College London

17:00  Close
Session abstracts

9:30  
**Towards the global eradication of yaws**  
Dr Michael Marks, London School of Hygiene & Tropical Medicine

Yaws was the first disease ever targeted for eradication by the World Health Organization. A WHO and UNICEF campaign in the mid-twentieth century resulted in a significant reduction in the prevalence of yaws worldwide – but ultimately the goal of eradication was not achieved.

Following a study published in 2012, showing that Azithromycin is an effective treatment for yaws, the WHO has launched a new campaign to eradicate yaws worldwide by 2020. This ambitious target faces a number of challenges which must be overcome if the target of yaws eradication is to be achieved.

10:10  
**Strategies to reverse the neglect of tropical snakebite victims**  
Dr Robert Harrison, Liverpool School of Tropical Medicine

Snakebite is a WHO-listed Neglected Tropical Disease that annually kills over 95,000 people residing in some of the world’s most disadvantaged subsistence farming communities, and leaves 2-300,000 surviving victims with permanent physical disabilities. It is the rural impoverished African and Asian communities, and particularly the most economically important 15-30 year olds that suffer disproportionally high rates of snakebite mortality and morbidity. Snakebite, like the other NTDs, is both a consequence and cause of tropical poverty.

I will describe how these bare statistics fail to reflect the true clinical and socio-economic burden on communities that are forced to live with snakebite as a daily, occupational hazard. I will discuss prevailing medical, demographic, economic and political issues that contribute to this global market failure.

The second part of my talk will focus on measures that can be taken (i) by scientists to generate more appropriate and effective snakebite therapies and (ii) by clinicians, government health ministries, international health agencies and the pharmaceutical industry to combat this substantial and preventable burden of death and chronic disability.

11:20  
**Challenging Parasites. A Hospital for Tropical Diseases Production. Directed by Peter L Chiodini. Coming shortly to a theatre near you.**  
Professor Peter Chiodini, University College London

The Hospital for Tropical Diseases includes the Public Health England National Parasitology Reference Laboratory and a specialist parasitology clinic.

This presentation will consider the challenges posed by two indigenous but still largely imported parasites, *Fasciola hepatica* and *Echinococcus granulosus* as seen in the clinic. Changing demographics, geographical factors and limitations in their current management will be explored, with a road map for future care.

12:20  
**Meningococcal disease and new vaccine programmes**  
Dr Shamez Ladhani, Public Health England

In 2015, the United Kingdom became the first country in the world to implement a comprehensive meningococcal immunisation programme targeting all the main capsular groups of *N. meningitidis*. 
An infant vaccine programme against capsular group B meningococci (MenB) was launched from 01 September with the aim of reducing endemic MenB disease in early childhood. Because of high rates of fever post-vaccination, parents are advised to give their infants three doses of prophylactic paracetamol, with the first dose given as soon as possible after the primary MenB vaccination dose.

Since the vaccine only protects against 73-88% of MenB strains causing invasive disease in England, clinical isolates and PCR-positive samples will require extensive characterisation in order to monitor vaccine effectiveness and identify potential vaccine failures. On 01 August 2015, the UK also introduced an adolescent immunisation programme against groups A, C, W and Y meningococci (MenACWY) to halt a rapid expansion of a single endemic hyper-virulent MenW strain belonging to sequence type 11 clonal complex.

Clinical, epidemiological, molecular and genomic surveillance will play a critical role in monitoring the impact of the two new meningococcal immunisation programmes on the burden of invasive meningococcal disease in England.

13:30
Ebola: recent case management experiences in Glasgow
Dr Emma Thomson, University of Glasgow

The recent outbreak of Zaire Ebola virus disease in West Africa is leading to new insights into the pathogenesis of disease associated with infection. Importantly, it has been shown that Ebola virus may persist for months in immune privileged sites in survivors.

This is discussed with reference to one of the cases recently treated in the UK. Presentation, treatment and follow-up is discussed with reference to follow-up of those exposed to infection locally and the expanded access use of the VSV-EBOV vaccine in secondary exposure.

14:30
Ebola: experimental therapies and UK preparedness
Dr Michael Jacobs, Royal Free Hospital

The devastating Ebola outbreak in West Africa provided a unique opportunity to investigate antiviral therapies. Unfortunately there were few data on Ebola therapeutics prior to this unprecedented outbreak. Drug development was expedited in response to the epidemic, but ultimately no therapy has yet been shown to be effective.

Limited trial and observational data from this outbreak and first principles will guide the next stage of drug development. It is essential that we are better prepared and able to implement relevant and appropriate trial protocols from the beginning of the next Ebola outbreak.

15:20
'To walk bent over': an update on the worldwide Chikungunya epidemic
Professor Sarah Rowland-Jones, University of Oxford

To most physicians twenty years ago, Chikungunya was an infection with an obscure tropical virus that caused sporadic outbreaks in distant places and was difficult to pronounce. Since then, two major worldwide epidemics of Chikungunya have occurred: one started on the Kenyan coast in 2004 and spread rapidly around the fringes of the Indian Ocean, into India and South-East Asia and on into Polynesia, the second arising in the Caribbean islands in 2013 from where it has exploded into central and south America, causing over a million infections in the first year.

The name Chikungunya means “to walk bent over” and refers to the characteristic posture caused by joint pain and inflammation, the most common complication of this infection which afflicts about half of those infected and can persist for months or years. In this talk I shall describe the
epidemiology and clinical features of Chikungunya infection, and discuss our current understanding of disease pathogenesis and the prospects for controlling the infection.

16:00
Resurgence of scarlet fever in the UK
Dr Theresa Lamagni, Public Health England

Scarlet fever is one of many clinical manifestations of *Streptococcus pyogenes* (Lancefield group A streptococcus) infection, typified by sore throat, fever, headache, fine sandpapery rash and flushed ‘scarlet’ cheeks. Whilst historically common and severe, both the incidence and severity of scarlet fever diminished over the course of the last Century for reasons as yet unexplained.

Following a prolonged period of low incidence, a remarkable upsurge in scarlet fever occurred in the UK in 2014 which saw the highest number of notifications in 45 years. Investigations were initiated to assess possible reasons for the escalation in disease incidence and its impact on the frequency of complications and severe outcomes. Latest findings will be presented.

16:40
Advances in RSV vaccine development: translating experimental findings to clinical trials
Dr Maximillian Habibi, Imperial College London

Understanding of respiratory syncytial virus (RSV) disease and vaccine development has been hampered by an incomplete understanding of the immune mechanisms of protection and disease in humans. Re-infection with antigenically similar strains of RSV occurs throughout life, and observational studies of natural infection do not permit analysis of events in the pre-symptomatic phase of disease. While animal models of RSV infection provide mechanistic insights, they do not recapitulate all aspects of human disease and remain imprecise guides to clinical efficacy of vaccines. Experimental infection of volunteers therefore offers an important complementary approach, allowing intensive sampling and the opportunity to perform detailed investigations of pre-existing and pre-symptomatic responses.

Over the last 5 years, we have inoculated 61 healthy adults with RSV A Memphis 37, a well-characterised, minimally-passaged, GMP-produced challenge virus. Local mucosal RSV-specific IgA, not serum neutralising antibody, was demonstrated as the most reliable correlate of protection from infection. For the first time, a defect in RSV-specific IgA memory was identified that may explain the lifelong susceptibility of adults to this infection. Serial sampling of the lower airway by bronchoscopy demonstrated surprising extensive inflammation and viral antigen despite minimal symptoms. Additionally, lung virus-specific T cells accumulated at high frequencies during convalescence and pre-inoculation frequencies correlated with protection against symptomatic disease when humoral immunity was overcome.

Taken together, these findings highlight previously unexplored avenues for further research into protective immunity. Ongoing work continues to attempt to identify mechanistic explanations that may finally yield an effective and safe human RSV vaccine.

**Speaker biographies**

**Professor Peter Chiodini** graduated from King’s College London with First Class Honours in Zoology and gained his PhD in Parasitology at the Wellcome Research Laboratories. He then studied Medicine in London before undergoing specialist training in Communicable Diseases in Birmingham. He is Consultant Parasitologist at the Hospital for Tropical Diseases, Honorary Professor at the London School of Hygiene & Tropical Medicine and Director of the Public Health England (PHE) Malaria Reference Laboratory and the PHE Parasitology Reference Laboratory.
Professor Chiodini organises the UK National External Quality Assessment Schemes for Parasitology, is a member of the PHE Advisory Committee on Malaria Prevention in Travellers, the Department of Health Advisory Committee on Dangerous Pathogens, and advises the National Blood Service on the prevention of transfusion-transmitted parasitic infections. He was Dean of the Faculty of Travel Medicine of the Royal College of Physicians and Surgeons of Glasgow (2009 to 2012). He is also a practising clinician at the Hospital for Tropical Diseases, with special interests in malaria and hydatid disease. His research interests include new diagnostic methods for parasitic infections, malaria, Chagas disease and hydatid disease.

Dr Maximillian Habibi is an Honorary Clinical Research Fellow at the Centre for Respiratory Infection, National Heart and Lung Institute, Imperial College London, with a research interest in Viral Immunology.

Dr Habibi began his medical studies at Imperial College London in 1997. During this time, he undertook an Intercalated BSc in Pathology and Basic Medical Sciences at St. Mary’s Campus, where he developed an interest in Infection and Immunology, and completed a laboratory project investigating cytokine secretion in an experimental model of cutaneous Leishmaniasis. He completed his medical studies in 2003, and currently holds a National Training Number in Infectious Diseases and Medical Virology.

Between 2010 and 2014, he undertook a Wellcome Trust funded PhD project at the National Heart and Lung Institute with Dr Christopher Chiu and Professor Peter Openshaw. His project involved a study of host immunity during experimental respiratory syncytial virus infection of human volunteers. During this time, Dr Habibi developed interests in innate immunity to viruses and the generation and maintenance of mucosal antibody responses. He continues to collaborate with ongoing work in the department involving experimental human infection challenge. He has recently completed his clinical training and intends to develop a career as a clinician scientist.

Dr Robert Harrison heads the Alistair Reid Venom Research Unit at the Liverpool School of Tropical Medicine. He and his team conduct variety of research activities with the objective to ‘improve the treatment of snakebite’. This includes the provision of antivenom to treat rural snakebite victims in Nigeria through a collaboration (the EchiTAb Study Group) with the Nigerian Federal Ministry of Health, the University of Oxford and antivenom producers in UK and Costa Rica. This collaboration has resulted in the provision of 37,000 vials of new antivenoms (18,500 life-saving treatments) to resolve the crisis in antivenom supply to Nigeria.

Harrison’s research focus is to exploit advances in ‘high volume-high throughput’ gene and protein technologies to develop new antivenoms that are (i) more toxin-specific (to improve efficacy), (ii) more cross-generically effective (to improve geographical clinical utility), (iii) clinically safer and, for the first time, (iv) effective against the local tissue-destructive effects of envenoming. The intent is to design therapeutic production systems whose clinical and logistic attributes provide compelling incentives to international health agencies and commercial antivenom manufacturers to improve the delivery of effective, safe and affordable snakebite therapies to the rural poor African and Asian communities that most need it.

Dr Michael Jacobs is Consultant in Infectious Diseases at the Royal Free Hospital in London. He trained at Oxford and London universities before completing a PhD in Virology. He is interested in all aspects of clinical infectious diseases with a special interest in serious viral infections. He is director of the Royal Free High Level Isolation Unit and is a member of the UK Advisory Committee on Dangerous Pathogens. He has worked at the centre of the UK response to the West Africa Ebola outbreak, and serves on several national and international Ebola advisory committees. He is NHS England Programme Director for High Consequence Infectious Diseases.

Dr Shamez Ladhani is a paediatric infectious disease consultant at St. George’s Hospital, London, senior lecturer at St. George’s University of London and clinical epidemiologist at Public Health England. He completed his medical training at Guy’s and St. Thomas’s Hospitals, London and specialised in paediatrics. In 2000, he worked in Kenya as a paediatric registrar in a district
hospital and then went on to complete a PhD in genetic epidemiology of vaccine preventable infections. During 2007-09, he completed the two-year national grid training programme in paediatric infectious diseases at St. George’s Hospital in South London.

At Public Health England, he is the clinical lead for enhanced national surveillance of a number of vaccine-preventable infections, including Haemophilus influenzae, Streptococcus pneumoniae and Neisseria meningitidis. He is also involved with conducting clinical trials on behalf of the Department of Health to inform national immunisation policy.

**Dr Theresa Lamagni** is a Senior Epidemiologist working at Public Health England. She completed an MSc in Epidemiology at the London School of Hygiene & Tropical Medicine and a PhD on the epidemiology of severe group A streptococcal infections in Europe at the University of Helsinki.

She came to work for the Public Health Laboratory Service Communicable Disease Surveillance Centre in 1995 as a research assistant within the HIV & STI department. In 2001, she joined the newly formed Healthcare Associated Infection & Antimicrobial Resistance Department.

She currently manages the surgical site infection surveillance programme and is the lead epidemiologist for streptococcal diseases in PHE. She is involved in a number of national and international projects concerned with developing new surveillance initiatives, research programmes and public health guidelines.

**Dr Michael Marks** is a specialist registrar in infectious diseases and general medicine and a clinical research fellow on the LSHTM/Wellcome Trust Clinical PhD scheme.

His research focuses on understanding the impact of azithromycin mass administration on treponemal infections as part of a strategy to eliminate yaws in the Solomon Islands including work on disease mapping and the evaluation of diagnostic tests. Alongside this he acts as a technical advisor to the WHO yaws eradication campaign which is aiming to eradicate yaws worldwide by 2020.

**Professor Sarah Rowland-Jones** trained in medicine in Cambridge and Oxford Universities, and then in Infectious Diseases in London and Oxford. She leads a research programme in the Nuffield Department of Medicine in Oxford focuses on the role of cellular immune responses to viral infections, particularly HIV-1-specific T-cells and how viral evolution leads to evasion of T-cell recognition.

A key focus of the group is the study of patient cohorts with distinct outcomes of HIV-1/2 infection and exposure, in collaboration with epidemiologists and clinicians throughout Africa and Asia: her group has also studied immune responses in dengue virus and avian influenza infection in Viet Nam. Between 2004-08 she was Research Director of the MRC Laboratories, the Gambia, where her research interests focused on HIV-2 pathogenesis and the development of infant immunity in response to pathogens and vaccines in early life. She is an active clinician, holding an Honorary Consultant contract in adult Infectious Diseases at the Oxford University Radcliffe Hospital Trust.

She is Vice President of the RSTMH and chairs the Meetings committee. Her interest in Chikungunya infection comes from her previous experiences of studying emerging infections in SE Asia, and she is currently involved with collaborators in setting up new studies of dengue and chikungunya infection in Mexico.

**Dr Emma Thomson** trained in infectious diseases in Glasgow, London and Oxford in Infectious Diseases and now runs a research lab at the MRC Centre for Virus Research in Glasgow. The main aim of her research is to investigate the mechanisms behind spontaneous clearance and progression to chronicity in order to advance the search for an effective HCV vaccine. She follows a large cohort of patients in Glasgow and London who have been identified with early infection and who have been recruited and followed-up regularly following diagnosis (Acute HCV UK).
In order to identify novel B and T cell epitopes recognised during acute HCV infection she has developed a reliable protocol for next-generation sequencing of the entire HCV genome coupled with functional assays including flow cytometry, ELISpots and neutralisation assays. This project is funded by a Wellcome Trust clinical intermediate fellowship.

She works as an infectious diseases consultant with specialist interests in early hepatitis C infection and HCV/HIV co-infection at Gartnavel Hospital, Glasgow and Imperial College London. She is a member of the British HIV Association Hepatitis Group and works as an external consultant for the World Health Organisation. Recently she has been involved in writing the WHO Guidelines for the Care, Screening and Treatment of Hepatitis C, 2014 and the updated guidelines in 2016.

She has recently developed a clinical and research interest in Ebola virus infection - specifically in relapse of Ebola virus infection and in the immune response to the VSV ZEBOV vaccine in individuals vaccinated following exposure.

**RSTMH meetings calendar 2016**

**09 March 2016, SOAS**
Implementing the End TB Strategy and the Sustainable Development Goals

Confirmed speakers include:

Dr Helen Fletcher, London School of Hygiene & Tropical Medicine  
Dr Anthony Harries, The Union  
Dr Derek Sloan, Liverpool School of Tropical Medicine

**07-08 July 2016, Nairobi**
The Epidemiological Transition

Confirmed speakers include:

Dr Dixon Chibanda, University of Zimbabwe  
Professor Alison Elliott, MRC / UVRI Uganda  
Professor Moffat Nyirenda, Malawi Epidemiology and Intervention Research Unit

**12-16 September 2016, Cambridge**
Challenges in Disease Elimination

Confirmed speakers include:

Professor Jeremy Farrar, Wellcome Trust  
Professor Joy Lawn, London School of Hygiene & Tropical Medicine  
Dr Bruno Moonan, Bill & Melinda Gates Foundation

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