Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Abstracts of FIS/HIS 2016 – Invited Speaker Abstracts

Effective guideline implementation – a knowledge mobilisation perspective
Rahela Ahmad. Imperial College London

The process of guideline development has changed from being exclusive and closed to being more open and consultative. But at the organisational level, impact of guidelines only occurs when knowledge of what is ‘acceptable’ is re-negotiated collectively within and across professional groups and teams.

This session will draw upon methods of knowledge mobilisation (knowledge transfer, translation, exchange and co-production) to help inform effective guideline implementation for infection prevention, control (IPC) and antimicrobial stewardship. Assessments of the structural, process and cultural environments for effective knowledge mobilisation from research in England will be shared.

Thinking towards future directions for IPC and antimicrobial stewardship, two main themes will be presented: a. the extent of guideline consistency at national and organisational levels across the health economy and, b. the potential role of service users across the healthcare system.

Case 4: Mycobacterium Avium Intracellulare in Heart valves – description of a cluster and what do we do now?
Matthijs Backx. Infectious diseases and microbiology, Public Health Wales

During 2014–15, PHE were notified of seven European cases of Mycobacterium chimaera endocarditis or deep infection following cardiac surgery, six cases in Switzerland and one in The Netherlands. Both countries have attributed the infections to organisms in the heater cooler unit (HCU) of the cardiopulmonary bypass equipment. In February 2015 PHE convened a multi-agency incident management team to investigate whether patients in the UK were potentially at risk of M. chimaera from contaminated HCUs. Case finding is complete in England and Wales and identified 17 patients with infections due to M. avium complex following cardiothoracic surgery in 10 different NHS trusts.

In view of the essential nature of heater cooler units and the fact that it is not currently possible to totally eliminate risks associated with their use, NHS England and MHRA require providers to take all reasonable steps to mitigate these risks. This includes explicit compliance with HSE requirements and PHE or MHRA guidance. A Field Safety Notice was issued by the manufacturers of the Sorin HCU in June 2015, updating the decontamination regime for HCUs and recommending microbiological monitoring and removal of highly contaminated devices from service. What have been the implications of these recommendations?

Infection control and antimicrobial resistance; suitable topics for guidelines?
Mark Baker. Centre for Guidelines, National Institute for Health and Care Excellence (NICE)

This session will describe the process by which Guideline topics were referred to NICE and how the guidelines were developed. It will include an update on the current content of relevant guidance and the plans to develop the portfolio in the future. Links will be made to the CMO (Dame Sally Davies) report and the subsequent five year strategy on reducing antimicrobial resistance.

Vector-borne infectious disease migration in the 21st century: are we prepared?
Matthew Baylis, Veterinary Epidemiology, University of Liverpool, UK

The end of the 20th and start of the 21st centuries have seen unprecedented emergence of vector-borne diseases in Europe. Lyme disease and tick-borne encephalitis are spreading and increasing in incidence. Cases of Crimean Congo Hemorrhagic fever have appeared. There have been outbreaks of mosquito-borne diseases such as dengue, chikungunya and malaria, and Zika threatens us in 2016. There has been an even more dramatic emergence of vector-borne diseases of animals. Bluetongue, a viral disease of ruminants, has occurred over most of Europe, including the UK, and caused the deaths of millions of sheep. Schmallenberg, a new viral disease, appeared in 2011 and caused vast numbers of birth defects in cattle and sheep across the continent. African swine fever, a devastating disease of pigs, is currently spreading in Eastern Europe and slowly moving west. These dramatic events have been driven by numerous factors – social, demographic and environmental. They are facilitated by climate change, helping vectors to survive, spread and transmit disease. This presentation will review the greatest challenges to the UK, assess their causes and describe what we can do – perhaps – to mitigate the threat.

The respiratory microbial ecosystem in health and disease
Debby Bogaert. Paediatric Infectious Diseases, University of Edinburgh

Microbial communities have co-evolved with humans for millions of years. They inhabit all surfaces of the human body, including the respiratory tract. Specific sites harbor specialized bacterial communities and it is increasingly recognized that these different micro-ecosystems play a major role in maintaining human health. The respiratory tract is a complex organ system which primary role in human physiology is the exchange of oxygen and carbon dioxide. The human airways are colonized with niche-specific bacterial communities: it is increasingly recognized that one of their main functions might be to prevent respiratory pathogens from gaining a foothold on the mucosal surface and spreading to the lower respiratory tract. Current research addresses how the healthy URT microbiome is established, and what ecological and environmental factors direct early and subsequent development of respiratory microbial communities. Moreover, we focus on the relationship between respiratory microbiota development and maintenance of respiratory health.

Successful application of behaviour change principles in IPC interventions
Michael Borg. Infection Control, Mater Dei Hospital, Malta

Microbial communities have co-evolved with humans for millions of years. They inhabit all surfaces of the human body, including the respiratory tract. Specific sites harbor specialized bacterial communities and it is increasingly recognized that these different micro-ecosystems play a major role in maintaining human health. The respiratory tract is a complex organ system which primary role in human physiology is the exchange of oxygen and carbon dioxide. The
human airways are colonized with niche-specific bacterial communities; it is increasingly recognized that one of their main functions might be to prevent respiratory pathogens from gaining a foothold on the mucosal surface and spreading to the lower respiratory tract. Current research addresses how the healthy URT microbiome is established, and what ecological and environmental factors direct early and subsequent development of respiratory microbial communities. Moreover, we focus on the relationship between respiratory microbiota development and maintenance of respiratory health.

**Impact of the changes – endoscope decontamination**

Christina Bradley. Hospital Infection Research Laboratory, Queen Elizabeth Hospital Birmingham

The Advisory Committee on Dangerous Pathogens (ACDP) published revised guidance for the management of medical devices in relation to reducing the risk of transmission of TSE related diseases in February 2015. This included revision to Annex F for endoscopy. More recently the Department of Health England have revised CPP 01-06 (now HTM 01-06) to take account of these revisions and have included more information on the use of endoscope storage cabinets along with advice on residual protein testing, advice on decontamination of ERCP endoscopes and choledochoscopes etc. It is accepted that the assessment of cleaning is vital so the weekly testing schedule now includes the use of a process challenge device. The ACDP guidance recommends that endoscopes are reprocessed as soon as possible after use and HTM 01-06 puts a timeframe of 3 hours from use to the completion of the decontamination process. This and other changes to the advice on endoscope decontamination and the possible impact will be discussed.

**Quality indicators and HAI prevention and control: experiences and perspectives**

Silvio Brusaferro. Hygiene and Public Health, University of Udine, Italy

Quality and safety are currently essential characteristics required to healthcare organizations and to their professionals. Nevertheless how to measure and report quality and safety is still a debated issue. Although many experiences using different measures and indicators have been reported, a clear evidence about their role in increasing safety and quality is still lacking. Healthcare Associated Infections (HAI) because of their long tradition of measurement, because of the recognized role of an organization wide approach in their reduction and control, because of the evidences about the most effective ways to prevent them as well as for their impact in term of morbidity, mortality, litigations and costs, have been included in almost all available tools and systems for quality and safety evaluation in healthcare. There are also many experiences trying to agree about meaningful indicators related to HAI prevention and control as well as to Antimicrobial Resistance. The demand of quality and safety indicators in healthcare organizations is increasing supported by citizens, policymakers, insurers and professionals. Nevertheless more research is needed to define indicators focused on outcome more than on intermediate endpoints, targeted to different healthcare settings, meaningful to a patient centered perspective and linked to improvement in health outcomes.

**Fusobacterium necrophorum: a greater cause for concern in adolescents and young adults than group A Streptococcus**

Robert Centor. Internal Medicine, University of Alabama at Birmingham

Over the past 15 years, a series of studies have established that the gram negative anaerobe – Fusobacterium necrophorum – causes adolescent and young adult pharyngitis. The increasing incidence of the Lemierre syndrome (pharyngo-tonsillitis followed by rigors, supplicative internal jugular vein thrombophlebitis and septic emboli) spurred these investigations. More recently, several groups (including ours) have shown that Fusobacterium pharyngitis has the same clinical characteristics as strep pharyngitis, and occurs at least as often (and possibly more often) as a cause of pharyngitis in the 15–30 age group. Epidemiological studies from Denmark provided the data necessary to simulate the likely risk of Fusobacterium pharyngitis compared with the risk of strep pharyngitis. In an opinion piece I compared the risks of the Lemierre syndrome (from Fusobacterium pharyngitis) with the risk of acute rheumatic fever (from strep pharyngitis). I did not include peritonsillar abscess, although more recent data implicates F. necrophorum as the most common cause of PIA in this age group. The simulation provides evidence that for this age group, untreated Fusobacterium pharyngitis has greater risk of both mortality and morbidity than untreated strep pharyngitis.

**Is behavioural science the real driver for improving effective antimicrobial prescribing?**

Peter Davey. University of Dundee Medical School

The pressing need to measure and improve antibiotic use was recognised >40 years ago, so why have we failed to achieve sustained improvement at scale? Failure in medicine is largely due to ineptitude (failure to use existing knowledge) rather than ignorance (lack of knowledge). Consequently, it is notable that most interventions to improve antimicrobial prescribing are either designed to educate individual practitioners or patients about policies or to restrict prescribing to make practitioners follow policies. Interventions that enable practitioners to apply existing knowledge through decision support, feedback and action planning are relatively uncommon. There is an urgent need to improve the design and reporting of interventions to change behaviour. However, achieving sustained improvement at scale will also require a more profound understanding of the role of context. What makes contexts receptive to change and which elements of context, under what circumstances, are important for human performance? Answering these questions will require interdisciplinary work with social and behavioural scientists to integrate complementary approaches from human factors and ergonomics, psychology, education and organisational research.

**Case 1: Acinetobacter outbreak in the Neonatal Unit – Are you ready for this?**

Eleri Davies. IPQC Cardiff and Vale UHB; HCAI Programme Public Health Wales, Public Health Wales NHS Trust

The whole session is focussed on real infection prevention and control challenges experienced over the last few years. The Acinetobacter outbreak on a Neonatal unit will be presented to focus on the practical challenges faced in managing an outbreak of this nature, with an opportunity for brief discussion of controversial points.

**Treatment of hepatitis B and C in children: catching up?**

Suzanne Davison. Paediatric Hepatology, Leeds Teaching Hospitals NHS Trust

Eradication of HCV by 2030 and reduction of disease burden of HBV are national and global targets. To achieve these, affected individuals need identifying and referring for appropriate management. This entails a detailed assessment of host, virus and disease, and availability of treatment. Treatment children has additional challenges. Most acquire infection perinatally with a high rate of chronicity. Disease manifestations are usually mild. Infection may therefore be underrecognised or specialist referral deemed unnecessary. However, treating children with early infection may improve response and reduce transmission. Another issue is that since relatively few children are infected compared to adults, clinical trials may be perceived as more challenging and less rewarding. As improved therapies emerge rapidly, delay in paediatric trials may lead to a drug being superseded prior to study conclusion. Approach to viral hepatitis in children is now ‘catching up’. Concentration of expertise and a co-ordinated approach through clinical networks provides access to specialist care. European Medicines Agency has facilitated development of medicines for children. In 2016, results of the first paediatric trials of interferon-free regimes for HCV are emerging.
current treatments for HBV in adults are licensed for children, and trials of treatment for children during HBV ‘immunotolerance’ have commenced. Future challenges include improved screening and prevention through immunisation.

EU COMBACTE Group – Combating Bacterial Resistance in Europe in a public-private partnership

Ron De Winter, Miquel Ekkelenkamp. European Projects, University Medical Center Utrecht (UMCU)

As part of its Action Plan against the rising threats from Antimicrobial Resistance, the European Commission initiated the New Drugs 4 Bad Bugs (ND4BB) programme. ND4BB kicked off in January 2013 with the COMBACTE-project, aimed at improving the efficiency of research and development of new antibiotics through open sharing of knowledge between pharma industry and academia, and addressing the barriers to clinical development of antibiotics. Crucially, the COMBACTE will generate innovative trial designs to facilitate the registration of novel antibacterial agents. This collaboration is currently supporting over fifteen international trials, involving both (registration) clinical trials with drugs under development and investigator-initiated research. One of the backbones of COMBACTE is CLIN-Net, which aims to become a premier Europe-wide network of hospitals prepared for and experienced in performing high-quality clinical studies. The ultimate goal is to create a self-sustaining organization active in all European countries. CLIN-Net has an up-to-date portfolio of clinical trial sites in all European countries that maximizes efficiency of site selection and study performance. Alongside, LAB-Net has been established: a pan-European laboratory network to deliver epidemiological and microbial surveillance data to guide the selection of clinical trial sites. To this end, COMBACTE tries to collaborate as much as possible with already existing (national) networks.

Tuberculosis – new therapies/trials, and the management of MDR and XDR TB

Martin Dedicato. Infectious Diseases, Heart of England Foundation Trust

This session will discuss the basis for current X/MDRTB treatment regimens. New drugs and repurposed drugs will be discussed. A brief summary of ongoing trials and the TB drug pipeline will be outlined. The main learning outcomes will be 1. How to design an X/MDRTB regimen 2. Using genetic and phenotypic resistance data 3. The place of the new X/MDRTB drugs in patient management 4. Future X/MDRTB drug regimens.

Case 3: Faecal transplant – When the drugs don’t work – But can we set it up in our centre?

Rishi Dhillon. Public Health Wales Microbiology, Cardiff

Faecal Microbiota Transplantation (FMT) is a widely recognised and accepted treatment strategy for recurrent Clostridium difficile infection. However there are still significant barriers to implementing such a service. This talk will explore some of the practical considerations required to be taken into account when setting up a FMT service.

Typhoidal/non-typhoidal enteric fever in sub-Saharan Africa and the recent typhoid outbreak in Blantyre Malawi

Nicholas Feasey. Liverpool School of Tropical Medicine

Serovars of Salmonella enterica number amongst the most common causes of bacterial bloodstream infection (BSI) in sub-Saharan Africa (SSA). Nontyphoidal serovars have been identified as major causes of BSI, or invasive Nontyphoidal Salmonella (INTS) disease across SSA in association with HIV, malaria and malnutrition, whilst there is disagreement about the burden of Typhoid. Both Typhoid and INTS disease typically present with non-focal sepsis, therefore diagnostic microbiological facilities, in short supply in SSA, are necessary for identification. MLW has conducted longitudinal bacteraemia surveillance in Blantyre, Malawi since 1998, enabling the identification of three epidemics of multidrug resistant invasive Salmonella disease and facilitating a number of major genomic studies of invasive Salmonella disease, which have identified novel clades of S. Typhimurium and S. Enteritidis. Recent studies from across SSA have started to clarify the true burden of both INTS disease and Typhoid, revealing that the different serovars are in both geographical and temporal flux. Mortality from INTS disease was recently at 390,000/year in 2010. Many questions remain unanswered; there have been no clinical endpoint studies of the management of INTS disease, and the precise role that vaccines, WASH strategies and treatment play in the control of these conditions remains to be determined.

Recent discoveries around a novel typhoid toxin

Malick Gibani. Oxford Vaccine Group, University of Oxford

The typhoid-toxin is a recently identified exotoxin expressed by Salmonella Typhi. Converging lines of evidence suggest that typhoid-toxin may have a central role in the pathogenesis of typhoid fever and could account for the host-restriction properties of typhoidal Salmonella. In addition, typhoid-toxin is a strongly immunogenic antigen following natural infection, raising the intriguing possibility that typhoid-toxin could be a promising vaccine candidate for Salmonella Typhi. The lack of a meaningful animal model has, to-date, hampered the ability to explore this hypothesis in a biologically relevant host. A human challenge model for typhoid fever has recently been established by the Oxford Vaccine Group, providing a platform to study host-pathogen interactions in a controlled setting. In this talk, we will review evidence for the role of typhoid-toxin in the pathogenesis of typhoid fever and will present data from the human challenge model describing the host immune response to the typhoid-toxin. We will describe how the human challenge model is being applied to further investigate its role, by undertaking human challenge with a typhoid-toxin deficient strain of Salmonella Typhi. In addition, we will describe the regulatory requirements and processes involved in establishing human challenge models using genetically modified strains of bacteria.

Viral infections in neonates

Paul Heath. Paediatric Infectious Diseases, St Georges University of London

Although viral infections in the neonatal unit (NU) are likely to be more common than currently recognised, especially as causes of ‘neonatal sepsis’, there are several that are of particular importance. Neonatal HSV is a rare but increasing cause of disease and disability yet there is uncertainty as to the optimal strategy for prevention. Congenital CMV is also associated with controversy: who should be treated? How can it be prevented? What about treatment of postnatally acquired CMV? The evidence base on which to base decisions is unfortunately poor. Respiratory virus outbreaks on NNUs are well described with RSV, enterovirus and adenovirus most common and influenza surprisingly rare. Prevention of virus infections by intensifying hygiene measures and cohorting infected infants should be a major goal for NUs, as well as more common use of virus diagnostics. Healthcare-worker vaccination against influenza is essential and encouragement of vaccination of pregnant women with influenza vaccine is important. A maternal RSV vaccine is currently in phase III trials and offers promise in preventing the burden of this disease in young infants.

The global challenges of typhoid and invasive non-typhoidal salmonella disease in 2016

Robert Heyderman. Infectious Diseases & International Health, Division of Infection & Immunity, University College London

Salmonella enterica is a leading cause of invasive bacterial disease among adults and children worldwide. However, although described in the 1800s, invasive Salmonella infection (typhoid fever or invasive
nontyphoidal Salmonella) has largely not been seen as a public health priority. Over the coming years, life-threatening Salmonella disease will become even more prominent as highly effective protein-conjugate vaccines against Haemophilus influenzae type b (Hib), Neisseria meningitidis, and Streptococcus pneumoniae are widely introduced. In this context, there remain large gaps in our knowledge of Salmonella disease pathogenesis, routes of transmission, and infection reservoirs. Many still hold to the established dogma that nontyphoidal Salmonella largely causes self-limited enterocolitis and that animals are a likely reservoir. It is frequently argued that since typhoid fever is associated with a relatively low mortality rate, there is a low burden of illness. Recently, high throughput whole genome sequencing has shown how the complex epidemiology and host adaptation amongst different Salmonella serovars is reflected in the bacterial genome, revealing putative pathways for the spread of Salmonella and the origin of multidrug resistance. With the appropriate epidemiological context and novel diagnostics, it is hoped that we will be able to finally unravel the mysteries of invasive Salmonella disease.

Update on ESPAUR

Susan Hopkins. Infectious Diseases and Healthcare Epidemiology, Royal Free London and Public Health England

The English Surveillance Programme on Antimicrobial Use and Resistance (ESPAUR) was established by PHE in 2013 in response to the cross-government UK five-year antimicrobial resistance (AMR) strategy. The aim of the programme is to develop and maintain robust data for antimicrobial use (AMU) and resistance, in order to optimise antimicrobial prescribing across healthcare settings and measure the impact of AMU and antimicrobial stewardship (AMS) on AMR and patient safety. The programme has established and improved surveillance data; published annual reports with greater data granularity over time; AMR indicators are available to professionals and public through http://fingertips.phe.org.uk/profile/amr-local-indicators. It has performed and published an assessment of AMS activities and implementation of AMS toolkits. It has worked with NHS England to develop and enable data collection to improve AMS as part of NHS incentive schemes. ESPAUR launched the ‘Antibiotic Guardian’ campaign to drive changes in public and professional behaviour around AMU -more than 32,000 people have engaged with this campaign. In collaboration with Health Education England ESPAUR has scoped and developed implementation options related to education and training of healthcare professionals for antimicrobial prescribing and stewardship competencies. Half way through the AMR strategy (2013–2018), ESPAUR is on target to meet its challenging objectives.

An update in anaerobic microbiology: Relevance to clinical practice

Harriet Hughes. Microbiology and Infectious Diseases, University Hospital of Wales, UK

Anaerobes play an important role in clinical infection, with significant associated morbidity and mortality. Logistic difficulties in obtaining appropriate clinical specimens in a timely manner, together with technical difficulties of traditional diagnostic methods have resulted in a relatively low rate of culture of clinically significant organisms. The impact of this, together with the difficulties of susceptibility testing in many laboratories, means that anaerobic infections risk being under-diagnosed and inappropriately treated. The use of new diagnostic techniques in the routine clinical laboratory over recent years however, has resulted in increased identification of anaerobic pathogens in different clinical scenarios, and is shifting our understanding of the role of these organisms in clinical infection. Molecular techniques not yet routinely available are pushing this understanding further. Alongside this, identification of resistance mechanisms and susceptibility profiles of these organisms can be used to direct specific therapy and inform future empirical antibiotic choices. This talk will highlight the changes to routine diagnostic methods for anaerobes, and discuss how this has impacted on the range of anaerobic infections being diagnosed in our hospitals. It will also discuss the trends in local resistance patterns and how this may affect future empirical antibiotic choices. Finally, it will consider future challenges and solutions in the field of clinical anaerobic microbiology.

Infection control and antimicrobial resistance: what guidance is there and how should it be used?

Peter Jenks. Microbiology, Plymouth Hospitals NHS Trust

There is a multitude of guidance on infection control and antimicrobial resistance, so much so that one is almost spoilt for choice. Good quality guidance that is soundly evidence-based can promote the provision of excellent clinical practice and support quality improvement schemes. When used to guide decision making, they can also deliver efficiencies in clinical service provision and facilitate negotiation with commissioners. However, there are many areas of infection prevention and control practice where good quality evidence is lacking. While expert best practice guidance covers many of these areas, it is here that the practitioner needs to use their professional expertise and judgement. This presentation will describe the different guidance available on infection control and antimicrobial resistance and discuss how these might be used both clinically and strategically.

The impact of climate on healthcare-associated infections

Martin Kiernan. University of West London

This paper will review the literature on the effect of climate on healthcare-associated infections, drawing a distinction between seasonality and weather. Changes in meteorological factors can promote pathogen propagation and spread, and in patients, induce decreased immune function of patients. Temperature and humidity are important factors and have some influence on HCAIs. There is some evidence of seasonality for viral infections such as influenza and bacterial infections such as Legionella however there are also seasonal aspects to healthcare-associated infections such as gram-negative, staphylococcal and surgical site infections. The possible factors for this will be explored and discussed however seasonality (summer) and higher temperature (weather) do seem to be associated with higher rates of gram-negative healthcare-associated infection.

Infections in burns patients

John Kinsella. Intensive Care Medicine, University of Glasgow

Although burns are recognized to have a high mortality much of this mortality occurs in the Prehospital phase. As a consequence in hospital mortality is surprisingly low with typical mortalities from major centres in the low single figure percentages. Burn mortality is also falling, with an approximate 10% reduction in fires, burn casualties and mortality annually. Burn morbidity remains high, with long hospital stays, repeated procedures and multiple complications. Burn wound infections and sepsis increases the risk of mortality, impairs wound healing, increases graft failure and prolongs hospital stay. The diagnosis of burn wound infection is not simple, and relies on clinical appearances, markers of infection along with laboratory confirmation that is difficult to interpret. The early excision of burn wounds with grafting and coverage with synthetic materials appears to be reducing infection risk. Good epidemiological evidence now exists to demonstrate typical patterns of infect, particularly with gram-negative organisms that should lead to more accurate blind antibiotic regimens. The lecture will cover: · The current epidemiology of burns, · Burn outcomes, · The current Scottish burn care service · Typical patterns of infection in burn patients · Research challenges.

An update on non-tuberculous mycobacteria (NTMs)

Ian Laurenson. Scottish Mycobacteria Reference Laboratory

To Follow: Non tuberculous mycobacteria occur widely in the environment but many can cause significant clinical infections as well as contaminating samples and equipment. I will endeavour to summarise some of the key current issues and in healthcare.
Fundamentals of behaviour change
Carmen Lefevre. University College London

The importance of behaviour in preventing the spread of infection is increasingly recognised. For example, appropriate hand hygiene, correct use of protective gloves and clothing, and cleaning procedures, some of the key measures in preventing infection spread according the WHO, are all behaviours. For such measures to be effectively implemented we require a good understanding of what is required for a person to perform each behaviour. The most effective interventions to change behaviour target multiple parts of the health care system, including health care professionals, patients, and the public. Behavioural science provides methods for understanding behaviours and their influences, and for developing interventions that are most likely to be effective in their contexts. This talk will outline evidence-based principles of behaviour change and a systematic method for designing interventions to change behaviour. This involves defining a clear target behaviour, conducting a behavioural analysis to identify the facilitators and barriers of the target behaviour, and identifying the most suitable behaviour change techniques for the context. The talk will illustrate how these principles and methods can be applied to infection prevention, using examples of improving hand-hygiene and adherence to the ‘Sepsis 6’ guidelines in hospitals.

Resistance epidemiology update: new and old friends
David Livermore. Medical Microbiology, University of East Anglia

Old friends might be the wrong term in context, but the UK’s ESBL and carbapenemase problems show no sign of diminishing. Rather, the proportion of carbapenemase producers with OXA-48-like carbapenemases is expanding and local transmission of these, and of isolates with NDM carbapenemases, is increasingly important. Multidrug-resistant serotype 15A pneumoccoci, which are not covered by any conjugate vaccine, continue to represent an expanding problem. New resistance concerns include Enterobacteriaceae and P. aeruginosa with GES carbapenemases, which are difficult to recognise from phenotypes, also a few Salmonella and E. coli with the plasmid-mediated MCR-1 colistin resistance, though these are greatly outnumbered by isolates with mutational resistance. P. aeruginosa with VEB ESBLs are regular imports, best recognised by strong ceftazidime-clavulanate synergy. They are highly clonal. Regularly seen too are K. pneumoniae that have resistance to ceftazidime and cefepime, variable resistance or susceptibility to cefotaxime, together with reduced carbapenem susceptibility; ceftazidime-avibactam synergy is apparent but no relevant β-lactamase activity has been found, leaving their mechanism(s) an ongoing mystery. Lastly, a clonal outbreak of gonococci with high-level azithromycin resistance continues to cause concern: isolates were initially localised around Leeds, but have now spread into the Midlands and Southern England.

Investigator-led clinical infection research in the NHS: ARREST and ARK-Hospital
Martin Llewelyn. Infectious Diseases, Brighton and Sussex Medical School

The evidence we rely on to guide antibiotic treatment recommendations is remarkably weak. Better evidence is needed if we are to safely reduce unnecessary antibiotic use, particularly of broad-spectrum agents. With CRN support NHS clinicians can make a substantial contribution to research in this area. This is well illustrated by recent experience of the ARREST trial. ARK-Hospital is a new NIHR-funded research programme with the potential to dramatically reduce antibiotic overuse in NHS hospitals. By incorporating studies like ARREST and ARK-Hospital into our clinical practice we can ensure research is not merely completed but also impacts on our practice for the benefit of our patients.

HIV and ARVs: their impact on exposed uninfected children
Hermione Lyall. Infectious Diseases, Imperial College Healthcare NHS Trust

The number of HIV exposed uninfected (HEU) children born to HIV infected women now greatly outnumbers those few who are infected, an excellent consequence of worldwide PMTCT programmes. For more than 20 years, foetal exposure to antiretrovirals (ARVs) in utero has continued to increase, with over time, longer exposure and many different drug combinations. The possible effects of ARV in-utero exposure have to be considered on a complex background of the maternal, foetal and infant environment with consideration for: maternal immune function/activation; genetics; other infections; other drugs; smoking; prematurity; breast feeding and nutrition; and whether it is a resource rich or poor setting. I. d. s. will include all three groups: HIV unexposed uninfected (HUU); HEUs and HIV exposed infected (HEI) infants, unfortunately there are very few such large well controlled studies. Evidence for effects on mortality, congenital anomalies, cancers, infections, immune function, mitochondrial function, organ function and growth & development will be discussed. Specific drug associated toxicities will also be cited. The need for new epidemiological ways to follow up of HEU children, especially in resource poor settings, where the majority live, will be highlighted.

Is the Swedish and Finnish surveillance system a good indicator for quality?
Birgitta Lytsy. Department of Clinical Microbiology and Infection Control, Uppsala University Hospital

The Swedish Association of Local Authorities and Regions (SALAR) is an politically and economically independent employers’ organisation that represents and advocates for local government in Sweden. All of Sweden’s municipalities, county councils and regions are members of SALAR. SALAR represents and acts on their initiative. In 2008 SALAR initiated the national point-prevalence survey of health-care associated infections (HAI) that is still running twice a year and is mandatory for all regions. In 2013 SALAR implemented a national system for continuous incidence surveillance of HAI. The Swedish surveillance system is semi-automated and similar to the Finnish system SAI. The presentation will describe how the Swedish surveillance system is built up, how it works, describe the data compiled with its advantages and limitations.

Surveillance of antimicrobial use and resistance in Scotland
William Malcolm. NHS National Services Scotland

The UK Five Year Antimicrobial Resistance Strategy (2013–2018), co-ordinated in Scotland through the Controlling Antimicrobial Resistance in Scotland (CARS) group calls for better access to and use of surveillance data and improved data linkage. Moreover, the UK strategy highlights that linked data on bacterial resistance, epidemiology of infection, antibiotic use and clinical outcome are required to assess the intended and unintended impact of antimicrobial stewardship interventions. This short presentation will give an overview of the arrangements for surveillance of antimicrobial use and resistance in Scotland. The presentation will consider where the data comes from and how it is managed but the key focus will be on how the information is used to drive improvements in the antimicrobial stewardship programme co-ordinated by the Scottish Antimicrobial Prescribing Group. The presentation will also cover details of how the NHS Scotland Infection Intelligence Platform aims to support clinicians to improve outcomes and reduce harm for patients with or at risk from infection through enhancing and linking infection information held within NHSScotland in a single secure platform.
Introduction to the NIHR CRN Infection Specialty Group
Jane Minton. Infectious Diseases, Leeds Teaching Hospitals NHS Trust

The NIHR Clinical Research Network provides the infrastructure in England to enable the NHS to participate in high-quality clinical research so that people can benefit from new and better ways of treatment. NIHR CRN provides support to researchers to set up clinical studies quickly and effectively; collaborates with the life-sciences industry to deliver their work programmes; provides health professionals with research training; and works with patients to ensure they are at the centre of all research activity. The NIHR CRN comprises 15 Local Clinical Research Networks covering England, each one delivering clinical research across 30 clinical specialities. Each Specialty Group consists of representatives from the regions in England and the devolved nations and other stakeholders such as Public Health England. The Infection Specialty Group supports and promotes research in Microbiology, Infectious Diseases and Genitourinary Medicine by supporting studies on the NIHR Portfolio. These cover a wide range of topics including antimicrobials, diagnostics, and vaccines and include both interventional and observational projects. We also support investigators and other stakeholders planning new Infection studies to ensure that those studies will address patients’ needs and can be successfully delivered in the NHS.

Zika: the evolving outbreak of an old infection
Dilys Morgan. Emerging Infections and Zoonoses, Public Health England

Zika is a mosquito-borne viral infection principally transmitted Aedes aegypti mosquitoes. Infection is often asymptomatic or generally mild with symptoms similar to, but usually milder than dengue or chikungunya virus. In 2007, an epidemic occurred in Yap Islands in the Pacific Ocean, causing 5,000 infections. Outbreaks were then notified in several islands of the Pacific region in 2013 and 2014. Cases of Zika infection were first reported in Brazil from February 2015 onwards and by August 2016, 56 countries were reporting autochthonous transmission in the last three months. An association between Zika infection in pregnancy and foetal microcephaly was first reported in October 2015 following a large increase in cases of microcephaly in Brazil. Based on a growing body of research, there is an international scientific consensus that Zika virus is a cause of microcephaly and other congenital anomalies (congenital Zika syndrome). Cases of Guillain-Barré Syndrome following suspected or confirmed Zika virus infection have also been reported. Although Zika virus was identified in October 2015 following a large increase in cases of microcephaly in Brazil. Based on a growing body of research, there is an international scientific consensus that Zika virus is a cause of microcephaly and other congenital anomalies (congenital Zika syndrome). Cases of Guillain-Barré Syndrome following suspected or confirmed Zika virus infection have also been reported. Although Zika virus was identified in 1947, new developments related to the disease and transmission continue to reported. This produces challenges for ensuring that guidance for travellers and their contacts who may be at risk of Zika infection remains consistent with the latest scientific evidence.

From zero to hero
Sara Mumford. Infection Prevention and Control, Maidstone and Tunbridge Wells NHS Trust

In 2006 Maidstone and Tunbridge Wells NHS Trust had one of the largest C. difficile outbreaks in the UK. The subsequent Healthcare Commission report was published in October 2007. Over the last 10 years the Trust has successfully defined and implemented a successful Infection Prevention strategy which has taken the Trust from the worst fifteen Trusts for C. difficile rates to the highest performing fifteen with a rate of infection last year of 7.4 per 100,000 bed days. The strategy has been underpinned by a staff engagement and education programme, together with innovative practice and true Board to ward accountability and responsibility. In this presentation I will share some of the highs, lows, innovations and lessons learned of the Trust’s journey to turnaround its infection prevention performance and discuss the key drivers of our success.

Novel educational solutions to drive better prescribing – evidence of effectiveness?
Dilip Nathwani. Ninewells Hospital and Medical School

The critical role of education in supportive prudent prescribing is well recognised. This presentation will focus on the role of educational solutions in the context of antimicrobial stewardship. Key topics will include: 1. Why education delivery in the workplace can be so complex and challenging? 2. The educational needs of medical students and healthcare professionals 3. the governing principles of educational programmes and a framework for educational competency for stewardship 4. Evidence of the effectiveness of traditional and novel educational solutions in the context of prescribing 5. Review the experience and impact of e-learning interventions including the MOOC [https://www.futurelearn.com/courses/antimicrobial-stewardship] and the evolving concept of space learning.

Update on the epidemiology of MERS
Ali Omrani. Infectious Diseases, King Faisal Specialist Hospital and Research Centre, Riyadh

Since its first description in September 2012, over 1,700 laboratory-confirmed cases of Middle East Respiratory Coronavirus (MERS-CoV) infections have been notified to the WHO. The clinical spectrum of MERS-CoV infection in humans ranges from an asymptomatic or mild respiratory illness to severe pneumonia, multi-organ failure and high mortality. A few potential therapeutic agents have been identified but none has been conclusively shown to be clinically effective. Human to human transmission is well documented, but the epidemic potential of MERS-CoV remains limited at present. Healthcare-associated clusters of MERS-CoV have been responsible for the majority of reported cases. The largest outbreaks have been driven by delayed diagnosis, overcrowding and poor infection control practices. However, chains of MERS-CoV transmission can be readily interrupted with implementation of appropriate control measures. Bats harbor several betacoronaviruses that are closely related to MERS-CoV. Evidence from multiple sources implicates dromedary camels as natural hosts of MERS-CoV. Camel to human transmission has been demonstrated, but the exact mechanism of infection remains uncertain. Strict regulation of camel movement, regular herd screening, isolation of infected camels, use of personal protective equipment by camel handlers are potentially useful measures to prevent primary MERS-CoV infections.

To what extent does the environment contribute to gastroenteric infections – Review
Jon Otter. Epidemiology, Imperial College Healthcare NHS Trust

I suspect that if you were to ask this same question to 10 experts, you’d get more than 10 different answers, ranging from ‘not very much at all’ right through to ‘the most common transmission route’. This talk will outline the evidence base that contaminated surfaces – and perhaps contaminated air – contributes to the transmission of key gastrointes- tinal pathogens Clostridium difficile and norovirus. The relationship between the level of surface contamination and the risk of transmission has not been studied in detail. It depends on various factors, including the characteristics of the organism involved, patient susceptibility and staff compliance with infection control policies (for example hand hygiene following contact with environmental surfaces). A number of studies have identified a correlation between a quantitative or semi-quantitative measure of the level of environ- mental contamination and the risk of pathogen acquisition. However, further studies are required to quantify the relationship between surface contamination and the risk of pathogen acquisition, and help us to direct prevention activities and resources.
The enigmatic virus of the great pandemic 1916–1924
John Oxford. Virology, Queen Mary’s School of Medicine and Dentistry

The Influenza virus arising from Europe as early as 1916, spread widely in 1918 as soldiers and airmen, including my father, returned to the four corners of the world on the ships of the British Navy. Global case fatality figures of around 7% are widely accepted although there are serious gaps in our knowledge especially in China and India. But unexpectedly regions of two continents experienced the extremes namely zero deaths in American Samoa, and a death rate of greater than 79% in Okak, Labrador. Major factors here are social including colonisation and religion which impinged on the societies. We have exhumed Phyllis Burns and Richard Sykes to obtain clinical samples from 1916–1924 and have also searched pathology museums for lung blocks as has J. Taubenberger. But to date no single gene of the virus has been shown to correlate with virulence leading to conclusions about the importance of co-infection with pneumococcus and to the importance of social behaviour. The emergence of influenza from initial clusters in the British Army at Aldershot Barracks and at Etaples-sur-mer in 1916 could have occurred via short term contract doctors and nurses from Harvard Medical School USA who criss-crossed the Atlantic and worked at Etaples.

Methods to evaluate quality indicators
Pierre Parneix. French Society for Hospital Hygiene (SFZH)

Since ten years, quality indicators (QI) are mandatorily measured in all French hospitals. They are used for hospital quality improvement, public disclosure and regulation goals. After a decade of use, the Ministry of Health and the French National Authority for Health set up a task force to evaluate these QI. The goal was to provide a decision tool to help the authorities in terms of withdrawing, revising or continuing their use. From a literature review and a review of national initiatives, we identified potential criteria for assessment. The taskforce extracted a list of criteria for each goal using a modified Rand/UCLA Appropriateness Method. Each criterion was assessed using a quantitative approach or a qualitative approach: This integrated tool was tested on four national process QIs related to healthcare-associated infections (HAI) management. Three major international experiences were studied. Among the fourteen retrieved potential criteria, 12 were selected as appropriate for the evaluation of QIs for regulation use including: benefit; side effects, feasibility, barriers for Implementation and current metrological performances. Among these, 11 were selected for hospital improvement and 7 for public disclosure. Applied to the four HAI QIs, the task force proposed to withdraw the indicator related to multidrug-resistant bacteria management and to undertake major revision on the three others.

What’s new in vaccines?
Andrew Pollard. Paediatric Infection and Immunity, University of Oxford

Immunisation is the cornerstone of public health policy globally and vaccine programmes in developed countries have provided a remarkable range of protection against serious infections that were once the major causes of early childhood morbidity and mortality. New vaccines have been introduced in the past 15 years which have had profound impact on child health. New candidates for high burden difficult infections such as malaria and dengue are now available and funding for control of outbreak pathogens (e.g. Ebola, plague) has been released to improve future preparedness. There has been little attention to understanding strategies for boosting the immune system of the growing population of elderly adults, and the prevention of nosocomial infection through vaccination has become a major focus of attention for developers. Despite the many successes, there remain some important gaps in the protection of children against infectious diseases which cause serious morbidity and have a massive burden on the health system (e.g. respiratory syncytial virus), or are rare but responsible for high morbidity and mortality (neonatal Group B streptococcal infection and adolescent capsular group B meningococcal vaccination). However, international efforts are expected to lead to new comprehensive programmes in the next decade.

Quality indicators: healthcare organizations and Insurances
Walter Popp. German Society for Hospital Hygiene

Quality indicators: healthcare organizations and insurances in the last years, there are a lot of new law and other regulations regarding Hospital Hygiene in Germany. The actual situation will be presented, especially regarding benchmarking of hospitals and discussion about future regulations. Also the role of healthcare organizations and insurances will be included.

Does education really change IPC behaviour?
Jacqui Reilly. Health Protection Scotland

It is often assumed that providing information on a topic will lead to knowledge gain and practice improvement. This assumption is flawed. A review of the evidence from IPC published literature on using education and training to change behaviour indicates variation in applied definitions of education and inconsistent reporting of educational interventions. Nonetheless there is evidence that education is an important component of a multimodal strategy for behaviour change in IPC. However the evidence indicates that single education sessions are unlikely to be successful and any positive change identified in the short term might not be reported long term pointing to the complexity of attitudes and behaviour. There is a need for the theory of andragogy to be considered by IPC professionals developing IPC training and education interventions as optimising the learning experience is key to maximising the potential for education and training to impact on behaviour.

Reducing sepsis mortality at scale
Kevin Rooney. Anaesthesia and Intensive Care Medicine, Royal Alexandra Hospital

Sepsis is an indiscriminate killer of people of any age, background and social status. Survivors of sepsis are also at increased risk of cognitive decline and account for a significant proportion of healthcare expenditure. In this presentation, Professor Rooney will share the National Strategy to fight Sepsis in Scotland which resulted in a 21% reduction in Sepsis Mortality. He will explain the ‘What, How and Why’ of the campaign, paying particular emphasis on the key attributes of reducing mortality at scale as well as any unanticipated consequences.

The role of intersectional innovations in preventing infection
Sanjay Saint. Department of Internal Medicine, University of Michigan; VA Ann Arbor Healthcare System University of Michigan

Professor Sanjay Saint, the George Dock Professor of Internal Medicine at the University of Michigan Medical School, Chief of Medicine at the VA Ann Arbor Healthcare System, and a Special Correspondent to the New England Journal of Medicine, will give the Lowbury Lecture entitled ‘The Role of Intersectional Innovations in Preventing Infection.’ He will make the following key points during this lecture. First, he will discuss the importance of infection prevention, in general, and catheter-associated urinary tract infection (CAUTI), in particular. Second, he will provide an overview of how to prevent CAUTI with a focus on recent data, and describe both technical and socio-adaptive aspects to reducing healthcare-associated infection. Third, he will define ‘intersectional innovations’ and distinguish intersectional innovations from ‘directional innovations’. Fourth, he will provide an overview of the intersectional innovations that could impact infection prevention efforts such as human factors engineering, cognitive psychology, sociology, and management science. Finally, he will discuss future directions in infection prevention, including the possible role of mindfulness.
Genetic susceptibility to severe viral infections in children
Vanessa Sancho Shimizu. Imperial College London
Severe, unusual or recurrent viral infections of childhood are increasingly recognized as being due to an underlying genetic primary immunodeficiency. With recent advances in genomics and sequencing technology, there has been a surge in the discovery of single gene disorders identified as underlying childhood infectious diseases. Among these are a number of genes predominantly associated with viral infections of childhood, which will be discussed in this talk with a specific focus on the human herpesviruses. Some of these immunodeficiencies are specific to a particular viral infection whereas others predispose to multiple viral, bacterial or fungal infections. The discovery of these genes has greatly enhanced our understanding of protective immunity to pathogens, allowing us to gain new insights into the specific and non-specific immune mechanisms controlling viral infection.

Tuberculosis – whole genome sequencing and other laboratory developments
Grace Smith. PHE NIS National Reference Mycobacteriology Service, PHE- Birmingham Public Health Laboratory
Advocates of Whole Genome Sequencing technology suggest that whole genome determination should form a key part of future diagnostic pathways for M. tuberculosis. However, the NGS-based process requires careful evaluation before it can be introduced into routine practice as an accredited TB diagnosis solution. The Birmingham Public Health Laboratory (PHL) has lead on a pilot project for TB-WGS with which began in July 2014. A successful collaboration between Oxford University, PHE, NHS and international collaborating partners in France, Germany and Canada has enabled us to design a world-first pilot for creating a WGS-centred TB identification, resistance prediction and determining transmission events within local communities. The main aim of the Birmingham pilot was to the wider implementation of WGS as part of the routine management of NHS patients with TB and the more specific objectives included:
- To accelerate the introduction of WGS into the NHS TB care pathway
- To deliver improved patient care through a personalised therapeutic approach, especially for drug resistance prediction
- To deliver improved public health control of TB through better understanding and management of local transmission networks and to support national surveillance I will give an update on progress towards full accreditation of WGS for mycobacteria and additional developments in the Reference Service.

Issues affecting women with HIV
Shema Tariq. University College London
Of the 37 million people currently living with HIV globally, half are women. Looking at the United Kingdom (UK) in particular, women are the second largest group (after men who have sex with men) affected by HIV. Furthermore, advancements in antiretroviral therapy (ART) have resulted in significant improvements in survival leading to increasing HIV prevalence rates amongst women in their midlife and beyond. There are important biological and psychosocial differences between men and women that may lead to disparities in both HIV-related clinical outcomes and experiences of living with HIV. For women, this includes reproductive transition from puberty through to pregnancy and menopause. In this presentation I aim to provide a broad overview of HIV in women through the life course. As context I will summarise current epidemiological data on HIV in women in the UK. I will then focus on three key themes: virological response to ART, pregnancy and infant feeding, and finally the emergent area of menopause transition in women living with HIV.

HIV in pregnancy – current trends and challenges in the UK
Pat Tooley. UCL GOS Institute of Child Health
About 1200 women living with HIV currently become pregnant each year in the UK, down from the peak of nearly 1500 in 2010. Most of these women know about their HIV before they get pregnant, and around two-thirds are already taking anti-HIV drugs when they conceive. Transmission of infection from a diagnosed mother to her baby is at an all-time low, with fewer than 1 in 200 infants becoming infected themselves. Preventing new infections in women and children, maintaining high (and early) uptake of antenatal screening, providing appropriate care in pregnancy and ensuring that women can have as normal a pregnancy and delivery as possible while maintaining and even improving on this very low transmission rate are all vital but challenging goals. Why do paediatric infections still happen? What should be done if a woman declines the antenatal screening test? What are the safest HIV drugs to use before and during pregnancy? Do some women with HIV still need to deliver by caesarean section? Can a mother who has HIV breastfeed her baby? Before, during and beyond pregnancy we need to ensure and enhance the long term health and well-being of women living with HIV, and all their children.

Can new diagnostic technologies help infection prevention and management?
Estee Torok. University of Cambridge
This talk will outline recent advances in diagnostic technologies, including microbial whole genome sequencing, and discuss their potential applications in the diagnosis and prevention of infectious diseases.

Practical aspects of the changes
Karen Tweed. Sheffield Teaching Hospital Trust
Practical aspects of the changes for surgical equipment and endoscopy. The updated HTM 01-01 guidance has been developed to support health organisation in delivering the required standard of decontamination for surgical instruments, building on good practice to ensure the correct standards of infection prevention and control are met. The major change to the guidance is the recent changes in Advisory Committee on Dangerous Pathogens Transmissible Spongiform Encephalopathy (ACDP – TSE) which is suggesting a move towards in situ testing for residual proteins on instruments because of the continuing risk of transmission of prions. The guidance provides information on how sterile services departments (SSDs) can mitigate the patient safety risk from residual protein with a move towards first achieving this ≤5μg level and subsequently producing further reductions in protein contamination levels through the optimisation of decontamination processes. It is hoped that all acute trusts engage in this and have implemented this guidance by 1 July 2018 but for healthcare providers whose instruments are likely to come into contact with higher risk tissues, i.e neurological tissue, are expected to give this guidance higher priority and move to in situ protein detection methodologies by 1 July 2017. The impact of this guidance and the feasibility of implementation will be discussed.

Examples of using surveillance data for quality improvement
Tejal Vaghela. West Hertfordshire Hospitals NHS Trust
Surveillance data of antimicrobial usage is critical to understanding changes in antimicrobial resistance and for measuring the effects of stewardship interventions. In addition quality improvement interventions utilising an audit and feedback approach can provide process and outcome measures as an integral part of an antimicrobial stewardship plan. This session will share examples from hospital practice from across the UK to show how surveillance and audit data have been used to improve clinical practice and patient outcomes. The work demonstrates how UKCPA colleagues are contributing to Objective 2
Thinking outside the box? Healthcare acquired waterborne infections from equipment
Jimmy Walker. Public Health England

Thinking outside the box? Healthcare acquired waterborne infections from equipment The recent publication of the ‘Health Technical Memorandum 04-01: Safe water in healthcare Premises’ included recommendations for the safe management of water systems, via the integration of water safety groups (WSG) to recognise and manage microbial risks to health. This presentation will assist those involved in WSG to assess the risks from a range of microorganisms including Legionella spp., Pseudomonas aeruginosa and Mycobacteria spp. Water is used in a wide range of equipment across hospitals and the risks are not always obvious. As well as considering water systems and outlets including showers and taps the presentation will also highlight the microbial risk from a range of stand-alone equipment including ice-machines, endoscopy washer disinfectors as well as heater-cooler units used during cardiac by-pass surgery. Control strategies will be discussed from a holistic perspective that will include competencies and training of staff.

Changes to ACDP guidance
Jimmy Walker. Public Health England

Recent guidance publications have maintained the precautionary approach in terms of the risk from prion related diseases and the potential for iatrogenic transmission and indicates that decontamination of re-usable surgical instruments is the cornerstone of safe surgery. Such approaches are underpinned by recent research that indicated that up to 1:2,000 of the population may have identifiable levels of abnormal prion protein in their peripheral lymphoid tissues and may be incubating the disease. As a consequence of this evidence, DH research and risk assessments the current suite of protein detection technologies were brought into question and alternative protein detection strategies related to the entire surface of instruments investigated. After reviewing the data, the Advisory Committee on Dangerous Pathogens (ACDP) published recommendations that were subsequently written into recent guidance updates in HTM 01-01 ‘Decontamination of surgical instruments’ and HTM 01-06 ‘Decontamination of Endoscopes’, to improve the decontamination of both reusable instruments and endoscopes. This presentation will discuss the back ground and the stages involved in formulating the recent DH guidance.

Clean water: complacency is not an option
Jimmy Walker. Public Health England

From a global perspective, climate change is predicted to have a major impact on people’s lives. However, the recent regional extremes of temperature, from <10°C to >30°C, across the UK in September 2016 raised concerns that there may also be an impact in the burden and type of disease at a local level, and that this may occur sooner than has previously been considered. Changes to marine and fresh water supplies already affect significant parts of the world’s population and it is likely to get worse and affect more countries. Infectious agents vary greatly in size, type and mode of transmission and can include viruses, bacteria, protozoa and multicellular parasites. This presentation will consider the changes in infectious disease transmission patterns of water-borne diseases and the likely consequences of climate change due to warmer water, drought, higher rainfall, rising sea levels and flooding, all of which will have an impact on the risk of water-borne disease in the UK.

Emerging waterborne infections and new sources
Michael Weinbren. Chesterfield Royal Hospital Foundation Trust

Water systems from a hospital infection perspective, apart from legionella, were largely ignored within the UK despite a significant body of evidence until the Belfast neonatal outbreak. As we learn more about water systems there is increasing evidence emerging that drains are an important key to the jigsaw. It is still likely to be the case that a high percentage of water transmission events go unrecongnised.

Laboratory diagnosis of Pneumocystis jirovecii – an update
P. Lewis White. Public Health Wales, Microbiology Cardiff

Pneumocystis jirovecii is a ubiquitous fungus that causes Pneumocystis pneumonia (PCP) specifically in humans. Diagnosis of PCP was hampered by the inability to culture Pneumocystis. Historically, diagnosis was based on microscopic examination and staining of respiratory samples for the presence of trophic and cysts forms. The performance of the different stains was generally comparable, but superseded by immunfluorescent testing using monoclonal anti-bodies to target the cyst, or both cyst and trophic forms. While the sensitivity of IF testing is superior to conventional staining it is still not infallible, although specificity is good. New diagnostic assays can assist in the diagnosis of PCP although result interpretation can be far from straightforward. PCP PCR has permitted testing of respiratory samples other than BAL, easing sampling pressures. PCR has greater sensitivity over IF but questions remain as to the significance of low level positivity, particularly in cohorts capable of raising an immune response. Conversely, PCR negativity in BAL samples can exclude disease, provided BAL sampling is adequate. The presence of 1-3-β-D-Glucan in serum is also a useful biomarker of PCP, providing high sensitivity and good specificity. However, 1-3-β-D-Glucan is not specific to PCP, and definitive thresholds for PCP are yet to be determined.

New guidelines for the diagnosis of PCP will also be discussed.

Stewardship issues related to rising resistance and new agents
Hayley Wickens. University Hospital Southampton NHS Foundation Trust

Good Antimicrobial stewardship requires a careful balance between choosing the correct antimicrobial to ensure optimal patient outcome, and being mindful of the effects on microbial ecology, particularly when making broad policy choices that will impact overall usage. At a time when antimicrobial resistance is inexorably rising, how do we use new agents appropriately?

Markedly variable risks of bacterial dissemination according to choice of hand drying method
Mark Wilcoxon. Medical Microbiology, University of Leeds, Leeds Teaching Hospitals NHS Trust

New data confirm the low proportion of CDIs that can be matched to prior cases. Independent significant risk factors for acquisition of CDI from another case include older age, longer inpatient duration and ribotype; these factors, male, higher severity and multiple positive samples increase the risk of onward transmission. Notably, there is a significantly greater risk of recurrence and 30-day mortality in patients with a matched donor. Changes to definitions used in England to apportion CDIs to healthcare/community will result in an increased proportion of cases designated as healthcare onset, and a marked decrease in those currently designated as community associated. The great majority of community onset cases with prior healthcare interactions occurred in the same Trust that reported the CDI. Treatment options for CDI will increase with the likely approval of bezlotoxumab, a human antitoxin B antibody. Bezlotoxumab reduces recurrence risk by ~40%, including in those at increased risk (severe cases, elderly, immunocompromised, hypervirulent strain). There is increasing evidence that metronidazole is an inferior treatment option for CDI, and so its place in guidelines requires review. FMT efficacy is
good although response rates in randomised studies are not as high as those reported in open series of patients.

Case 2: Carbapenemase producing enterobacteriacae in a rehabilitation centre – not quite the community but not an acute setting

Mandy Wootton. Public Health Wales

Spinal injuries units often house patients for long periods of time during rehabilitation, making transfer of colonising organisms between patients more likely. Carbapenemase producing organisms (CPO) limit clinical management of seriously ill patients but in specialist units may restrict rehabilitation and pose a serious public health risk. An OXA-48 containing K. pneumoniae was isolated from urine of a patient at UHW in February 2014. Retrospective testing of faeces from the same patient stored after C. difficile tests also was positive for K. pneumoniae and also E. coli, both containing OXA-48. Comprehensive screening of 62 patients, using enrichment techniques, over the next 18 months revealed 7 positive for OXA-48. Multiple infection control measures were implemented and communication between the unit and transferring hospitals was heightened. No patient had an acute infection due to the OXA-48 carrying organisms, however this study demonstrated the factors which were addressed in order to restrict the spread of colonising agents and procedures to be followed if infection did occur. Genetic characterisation of the OXA-48 isolates showed that genetic transfer of the OXA-48 had occurred between species and that the carbapenemase was present in multiple clones of both E. coli and K. pneumoniae.

Pneumocystis jirovecii – outbreaks and control of transmission

Eftihia Yiannakis. Worcestershire Acute Hospitals NHS Trust

Pneumocystis jirovecii pneumonia (PCP) is an important cause of morbidity and mortality in immunocompromised patients. Several nosocomial outbreaks of PCP have been reported in HIV-negative, immunocompromised patients. The primary route of P. jirovecii transmission has yet to be proven, however these outbreaks of infection suggest either inter-human transmission or a common environmental source. On formal review of the reported outbreaks, epidemiological and genotypic links between patients were identified. The evidence for nosocomial acquisition of PCP and possible person-to-person transmission of infection, suggests the need for formal infection control policies. These policies should include the routine surveillance for PCP in vulnerable populations as well as measures that should be considered to prevent the spread of infection between patients.