

Innovation Showcase:

Infection!!!

Programme

1st November 2018

12:00 – 16:00

Sunderland Royal Hospital
Education Centre
Kayll Road
Sunderland
SR4 7TP

“One sometimes finds what one is not looking for. When I woke up just after dawn on September 28, 1928, I certainly didn’t plan to revolutionise all medicine by discovering the world’s first antibiotic, or bacteria killer. But I suppose that was exactly what I did”.

Alexander Fleming



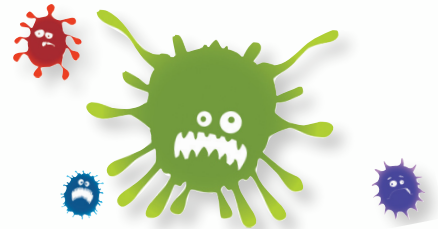
Staff can get their Flu Jab at the Showcase from 11:15 in Room 002

Increasing numbers of flu cases are being seen in the region and colleagues who have not yet had the flu vaccination are encouraged to do so in order to protect themselves, their families and our patients. As it can take 10-14 days following vaccination for your body to build up antibodies against the strains of flu, please act now!

We encourage all colleagues to have the free vaccination, especially those who work directly with patients. This is following the publication of a very solid piece of research that says that flu vaccination is not only good for stopping you catching the flu but also good at stopping you passing it on to vulnerable people, particularly the elderly.

Some Facts about flu:

- 1 in 3 people who have flu do not have symptoms
- Flu affects 5-30% of the population each year
- Everyone can catch flu not only 'high risk' groups
- The best time for vaccination is late September- early November. Not when there is an epidemic
- Flu vaccinations are 70-90% protective in healthy adults
- If you catch flu after vaccination it is likely to be milder than if you had not been vaccinated
- Vaccination benefits workers, their families, patients and colleagues
- Flu lasts on average around 7 days



Introduction

From the times philosophers and physicians such as Hippocrates and Galen started writing down their humoral medicine and folklore of herbs and mould, to Alexander Fleming's discovery of penicillin in 1928, we have been fighting the battle against infection.

Fleming's discovery helped revolutionise medicine in the twentieth century and shifted the balance in our favour, however, the overuse of antibiotics has led to resistance and our medicines, like some of the treatments from the past, are no longer effective, threatening progress and causing widespread problems, so much as to prompt the World Health Organisation to classify antimicrobial resistance as a "serious threat [that] is no longer a prediction for the future; it is happening right now in every region of the world and has the potential to affect anyone, of any age, in any country (Antimicrobial resistance: global report on surveillance The World Health Organization. April 2014).

If new and innovative treatments are not found by 2050 such infections could kill 10 million people a year worldwide - an average of one death every three seconds (Superbugs could kill more people than cancer, report warns, CBS New, May 2016).

Sepsis deaths recorded in England's hospitals have risen by more than a third in two years. The deaths recorded, do not necessarily prove that Sepsis is on the rise. A NHS England spokesperson reported "Over the past three years there has been huge effort across the NHS to increase clinical recognition of, and recording of, sepsis. That improved method of recording means some cases previously recorded as simple infections are now classified as sepsis. So this data does not prove an increase in sepsis cases". It is important for the public to recognise that the NHS is taking sepsis "incredibly seriously....If you go to any hospital now it is treated as one of the priorities and death rates are falling" (Professor Bryan Williams. Chair of Medicine at University College London and Director of the NIHR UCLH/UCL Biomedical Research Centre and Director of Research at UCL Hospitals, BBC, August 2018).

Sepsis is a life-threatening condition that arises when the body's response to infection causes injury to its own tissues and organs. It is triggered by infection but is the result of our own immune system going into overdrive. It starts with an infection that can come from anywhere. In early 2018 Coronation Street ran a story that started with a simple contaminated cut to the knee and resulted in a young boy losing his leg to undiagnosed sepsis. This has helped raise public awareness of this serious condition and the Sepsis Trust has provided a number of resources to aid in spotting the symptoms of sepsis.

At this showcase, South Tyneside and Sunderland Health Care group, with the support of their academic and commercial collaborators and partners will present some of the innovative methods and research that is being undertaken to assist in identifying and fighting different infections and sepsis. **The event will bring together NHS staff, researchers, companies and patient groups to create exciting collaborations and opportunities for addressing the challenge of Sepsis in the modern world.** We hope that this work will once again restore the balance in the ongoing battle against infections and further reduce the numbers of death and life changing complications of sepsis.

www.slido.com

At this event, we want to make sure we address all of your questions without you having to raise your hand or wait to the allotted time. Therefore, we'll be using a simple audience interaction platform called Slido which allows you to submit your questions and these will be read and reviewed by a member of our Innovation Team.

It's really easy to use.

1. Please take out your smartphones and connect to the WiFi*
2. Open the web browser
3. Go to www.slido.com and enter the event code, which is **#W343**

*Free WiFi is now available. Choose NHS WiFi, it will require you to complete a short registration. Please follow Trust guidelines and use a personal e-mail and a secure password.

We encourage you to ask questions via your mobile device; however we ask that you keep them on silent.

Today's agenda

12:00 – 12:50	Showcase stands and buffet lunch
12:50 – 13:05	Welcome
13:05 – 13:20	Don't Be a Dope, Wash Your Hands with Water and Soap Angela Scott & Peter Ingram South Tyneside and Sunderland Health Care Group
13:20 – 13:35	Stopping the Bugs Before they Get Started Alison M McDermott PhD Northumbria University
13:35 – 13:50	Novel Optical Point-of-Care Diagnostic System for Sepsis Professor Zulfiqur Ali University of Teesside
13:50 – 14:05	Using Meditech to Increase Sepsis Screening Compliance in Inpatients Dr Rob Duncan – Critical Care Outreach Team Lead City Hospitals Sunderland Sepsis Group
14:05 – 14:30	Break
14:30 – 14:45	Innovations in Infection Management Prof. Tim Paget University of Sunderland
14:45 – 15:00	Invention for Infection Angela Davidson Tinkle guard
15:00 – 15:15	Influenza Point of Care Test Dr. Katherine Watson City Hospitals Sunderland
15:15 – 15:30	Predicting the Activity of Novel Naturally Occurring Antimicrobial Compounds Dr Caroline Orr & Dr Sola Idowu University of Teesside and Hexis Lab
15:30 – 16:00	Questions and Close

Infection!!! Innovation Showcase

Don't Be a Dope, Wash Your Hands with Water and Soap

*Speaker: Angela Scott - Infection Prevention and Control Specialist Nurse
Peter Ingram - Infection Prevention and Control Specialist Nurse*



**South Tyneside and Sunderland
Healthcare Group**

Angela graduated from the University of Northumbria with a BSC (Hons) degree in Nursing Studies. She later went on to complete a Certificate in Higher Education and Diplomas in Ophthalmology and Infection Prevention and Control. She has been practicing as an Infection Prevention and Control Specialist Nurse for the past 15 years in both the community and acute sector.

Peter graduated from the University of Northumbria with a BCS (Hons) degree in Nursing Studies. He has been practicing as an Infection Prevention and Control Nurse for over four years within the acute sector.

Summary:

Hand hygiene is not a new concept but can be an area of poor compliance throughout the healthcare sector. During the presentation Angela and Peter will look at common bacteria found on hands, where and when decontamination should take place and what products should be used. They will share new initiatives they have used both at South Tyneside Foundation Trust and City Hospitals Sunderland to raise awareness of hand hygiene.

Stopping the Bugs Before They Get Started

Speaker: Alison M McDermott PhD - Professor of Cellular and Molecular Sciences Department of Applied Sciences Northumbria University



**Northumbria
University**
NEWCASTLE

Prof McDermott received her Bachelor of Science degree in biochemistry from the University of Surrey, in Guildford, and her PhD, also in biochemistry, from Imperial College of Science, Technology and Medicine, London. She then crossed "the pond" for post-doctoral research in New York, Ontario and Wisconsin. At the University of Wisconsin she joined the lab of veterinary ophthalmologist

Dr. Christopher Murphy and so began her career in eye research. In 1998 she joined the faculty of the University of Houston College of Optometry, Houston, Texas, USA. After almost two decades in Houston she decided to return home and took a faculty position at Northumbria University in 2017. Her primary research interests are in ocular surface innate immunity and inflammation in the context of infection, dry eye and corneal wound healing. Most of her work in the last two decades has focused on the role of antimicrobial peptides, such as defensins and cathelicidin, at the ocular surface. With chemistry collaborators she has been involved in developing antimicrobial surfaces and novel antimicrobial peptide delivery systems for future therapeutic use.

Summary:

In this presentation Alison will discuss her laboratory based research on how to take molecules with antimicrobial properties that occur naturally in the human body and utilise them to coat materials to create biological devices (in her case contact lenses) that resist pathogen colonisation and so reduce the risk of infection occurring.

Novel Optical Point-Of-Care Diagnostic System for Sepsis

Speaker: Professor Zulfiqur Ali - Research Professor & Director Healthcare, Teesside University, Middlesbrough



Professor Zulfiqur Ali is Research Professor & Director Healthcare - Innovation Partnerships. His research interests are in micro and nanofabrication approaches for creating devices that are high density and are more functional. Much of this work has focused on microfluidics for point-of-care diagnostic devices and for complex chemical and biological processing on a chip. Related work includes transducer development, particularly electrochemical and

optical sensing, and soft computing for primarily pattern recognition.

Summary:

“Point-of-care (PoC) diagnostics offers the opportunity to identify individuals at the earliest stage of their disease and transform the way that healthcare is delivered by providing a focus on sustaining health rather than treating late-stage patients with disease. Sepsis can arise unpredictably, progress rapidly and is a leading cause of death. The presentation will give developments within the NIHR i4i Sepsis PoC project on a novel and sensitive optical approach with a biomarker panel for a point-of-care diagnostic device for sepsis.”

Innovations in Infection Management

Speaker: Tim Paget - Professor of Medical Microbiology University of Sunderland



Tim Paget works in the Faculty of Health Sciences and Wellbeing at the University of Sunderland. He has been at Sunderland for 6 years and prior to that was at The City University of New York. His interests include parasitology but his work has expanded in the broader areas of microbial detection and development of novel approaches for the control of infection. He is part of the Microbiology group at Sunderland who have interests in microbial

genomics, the biology of biofilms, non-drug methods for control and virology.

Summary:

In his talk, Tim will present preliminary data from work based at City Hospitals Sunderland on the use of molecular tools for the detection of pathogens. Tim will also describe current microbiology projects run by colleagues at the University.

Invention for Infection

Speaker: Angela Davidson - Inventor & Director at Tinkleguard, Ltd.

The logo for Tinkleguard, Ltd. features the word "TINKLE" in a blue, blocky font above the word "GUARD" in a similar font. A small "TM" trademark symbol is positioned to the right of "GUARD". The entire logo is enclosed in a light green rounded rectangular border.

Angela invented a urine collection system for use with infants and disabled patients. The product is used to collect a urine sample whenever a urinary tract infection (or other illness) is suspected and laboratory testing is required.

The invention arose after having experienced first-hand difficulties in needing to collect a sample from Angela's grandson using the standard product given by the GP – the sample became contaminated and resulted in an extremely distressing time for the whole family.

After searching the academic literature and meeting with the academics and clinicians, Angela was able to establish that indeed there are significant problems in capturing uncontaminated samples for urinalysis from babies and other patient groups. This led Angela on the journey to designing and developing a significantly improved product for this purpose.

Angela presented her idea to nursing staff and the Innovation Department of City Hospitals Sunderland, who are interested in supporting this invention. Plans are moving forward to test the product in a clinical trial at the Sunderland Royal Hospital.

Summary:

Angela will discuss the benefits of her innovative product and explain how it addresses an unmet clinical need; her experiences of collaborating with City Hospitals Sunderland NHS Foundation Trust and the ongoing developmental work which has taken place in preparation for a clinical trial to take place.

Influenza Point of Care Test

*Speaker: Dr. Katherine Watson - Consultant Microbiologist
City Hospitals Sunderland Foundation Trust*

The logo for NHS City Hospitals Sunderland NHS Foundation Trust. It features the NHS logo (a blue square with a white cross) above the text "City Hospitals Sunderland" in a bold, black font, and "NHS Foundation Trust" in a smaller, blue font below it. The entire logo is enclosed in a light green rounded rectangular border.

Katherine attended medical school at Newcastle University and completed her training in Medical Microbiology at hospitals across the North East and has worked as a Consultant Microbiologist at City Hospitals Sunderland NHS Foundation Trust since September 2017. Dr. Watson is the deputy infection control doctor and lead microbiologist for the paediatric, neonatal intensive care and adult intensive care departments.

One of her roles in infection control is microbiology lead for influenza and as part of this she works with the excellent point of care team to trial an influenza point of care test at Sunderland Royal Hospital.

Summary:

The Cepheid GeneXpert Influenza A/B/RSV point of care test was trialled during the busy 2018 influenza season. Sending influenza swabs to the microbiology laboratory at the Queen Elizabeth Hospital adds extra time for transport and processing. The point of care test allowed samples to be tested on Emergency Department and Integrated Assessment Unit by their own staff and meant that a result was available within 30 minutes. 282 patients were diagnosed with influenza between January and March 2018 using the analyser. This rapid test was extremely helpful in reducing delays in diagnosis, starting antiviral treatment promptly and ensuring that appropriate infection control precautions were implemented to reduce cross-transmission to other patients and staff.

Predicting the Activity of Novel Naturally Occurring Antimicrobial Compounds

Speaker: Dr Caroline Orr - Principal Lecturer at Teesside University



Dr Caroline Orr is a Principal Lecturer at Teesside University. She has a PhD in Microbiology and Molecular Biology from Northumbria University. Her expertise lies in monitoring microbial activity and function within a range of environments from agricultural soil to medical samples. She has 10 years' experience and several publications in the area. Caroline began collaborating with Hexis Lab in

2016 and has been responsible for microbial testing and in vitro experimental design.

Dr Olusola (Sola) Idowu is CEO of Hexis Lab, an SME who provide in-silico formulation platform, databases and cloud computing resources. Sola has over 20 years' experience in product development and application of in-silico lead identification based on academic study and his subsequent role as Programme Manager at e-Therapeutics plc. He is author of 10 pharmaceutical patents.

Summary:

In this talk, Caroline and Sola will present some preliminary data from their work so far. Hexis Lab have an in-silico formulation platform which predicts the antimicrobial activity of naturally occurring compounds. We have taken several of these compounds and tested their ability to reduce growth of key microorganisms. We have also demonstrated that these compounds may have some potential in speeding up wound healing particularly in the presence of *Staphylococcus aureus* infection.

SHOWCASE STANDS

- *Innovation Department at South Tyneside & Sunderland Healthcare Group*
- *FabChange70*
- *Sepsis Trust*

- *Academic Health Science Network North East & North Cumbria*
- *Tinkle Guard Ltd, Jag Design*
- *Bionow*
- *South Tyneside and Sunderland Health Care Group Infection Control*

- *Newcastle In Vitro Diagnostics Co-operative (Newcastle MIC)*

The National Institute for Health Research (NIHR) Newcastle In Vitro Diagnostics Co-operative (NIHR Newcastle MIC) is one of 11 NIHR Medtech and In Vitro Diagnostics Co-operatives (MICs) in England. We generate high quality evidence on new in vitro diagnostics (IVD), medical tests which use a sample of tissue or bodily fluids. We work closely with IVD developers from industry, academia and the NHS to produce proof that their new test is an improvement, or at least as reliable and accurate, as the existing test. We have a particular focus on tests where there are currently unmet clinical needs, and these include:

- *Ageing and long-term chronic conditions*
- *Personalised medicine*
- *Infectious diseases*

This work hopefully helps better tests to be introduced into the NHS more rapidly and efficiently, for patient benefit.

We want your ideas

If you have an innovative idea for a new service, technology or product that can help improve patient care or if you have identified a problem or unmet need in your organisation and you are not sure what to do next...

Contact South Tyneside and Sunderland Health Care Groups internal Innovation Department at BrightIdeas@chsft.nhs.uk

The Innovation Department team assess every idea that comes to them and can help support your idea from concept to completion.

What do you think?

We value your comments, please don't forget to complete a feedback form or to complete it electronically

<https://www.surveymonkey.co.uk/r/8TW9DQ5>



About our sponsors:



**Academic Health
Science Network**
North East and North Cumbria

The Academic Health Science Network for the North East and North Cumbria (AHSN NENC) is dedicated to improving healthcare and driving economic growth. This is achieved through partnership working and promotion of innovation across the NHS, Academia and Industry. We act as a trusted intermediary amongst these organisations to identify, evaluate, adopt and support the spread of innovations in support of transformational change through high quality improvement work. We are one of a Network of 15 AHSNs located across England established to spread innovations at pace and scale which improve health and generate economic growth. To achieve this, the AHSN NENC created The Innovation Pathway, which has been acknowledged as a key achievement and subsequently rolled out to national partners. The Pathway is a collection of bespoke services covering the entire lifecycle of innovation, from the creation of a culture of innovation, to the due diligence and market assessment of new ideas, on to the clinical trialling and evaluation of new products and services, and through to their subsequent commercialisation and adoption.



**Innovation
Scout Scheme**

The AHSN NENC set up the 'Innovation Scout Scheme' in 2014 and it forms part of The Innovation Pathway. It is a network of healthcare professionals trained to identify, develop and spread innovation in order to stimulate the creation of ideas and drive a culture of innovation across organisations.

Find out more at www.ahsn-nenc.org.uk

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