

# FIS

# 2019

## POSTER BOOK

11- 14 NOVEMBER 2019,  
EICC, EDINBURGH, UK



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**MICROBIOLOGY**  
SOCIETY

# Presenting Tuesday Evening

## Final category: Anaerobic infection

### Poster No 001

#### A 1-year Tertiary Centre experience of *Clostridium difficile* infection.

Ieuan Walker<sup>1,2</sup>, Tumas Beinortas<sup>3,2</sup>, David Enoch<sup>4,5</sup>, Theodore Gouliouris<sup>4,5,2</sup>

<sup>1</sup>Addenbrooke's Hospital, Cambridge, United Kingdom. <sup>2</sup>University of Cambridge, Cambridge, United Kingdom. <sup>3</sup>Addenbrooke's Hospital, Cambridge, United Kingdom. <sup>4</sup>Clinical Microbiology and Public Health Laboratory, Public Health England, Cambridge, United Kingdom. <sup>5</sup>Addenbrooke's Hospital, Cambridge, United Kingdom

#### Abstract

##### Background

*Clostridium difficile* infection (CDI) adversely affects patient outcomes. CDI 30-day mortality is 15.2% nationally with some regional variation, but data on recurrence is limited. We assessed outcomes of CDI, in particular recurrence and mortality at Addenbrooke's Hospital.

##### Methods

We performed a retrospective analysis of all patients who developed CDI between April 2017 and March 2018. All-cause mortality was assessed at 30 days and 1 year. Recurrence was defined as recurrence of symptoms with *C. difficile* toxin positive stool or initiation of *C. difficile* treatment within 1-year after onset of first/previous episode. First-line therapy was metronidazole or vancomycin according to severity.

Clinical data was collected using a standardised proforma. Risk of recurrence was calculated using Cox's Hazard method in R.

##### Results

143 cases of CDI in 103 patients were identified. The median age was 70 years (range 2-98). Recurrence rate was 24.6% at 12-weeks and 30.3% at 1-year. 30-day and 1-year mortality was 14.4% and 39.8%, respectively. Recurrences had longer mean length of stay compared to 1<sup>st</sup> episodes (40.3 vs. 18 days, respectively,  $p < 0.05$ ). On univariate analysis, no factors predicted recurrence; acute kidney injury, C-reactive protein, toxic megacolon, Charlson comorbidity score and age predicted mortality.

##### Conclusions

CDI carries a significant mortality and recurrence rate placing a large burden on hospital resources. The majority of recurrences occur within 12 weeks of 1<sup>st</sup> episode, and patients' risk could not be accurately defined in this sample. Newer therapies with reported lower recurrence rates should be considered as 1<sup>st</sup> line therapy within our Trust.

# Presenting Wednesday Evening

## Poster No 002

### **Difficile but not impossible: Improving documentation to improve outcomes for Clostridium difficile infections in NHS Ayrshire and Arran**

Chloe Keane<sup>1</sup>, Niamh Doran<sup>2</sup>, [Clare Lavery](#)<sup>2</sup>, Liam Sutcliffe<sup>3</sup>, Peter Davis<sup>4</sup>

<sup>1</sup>University Hospital Crosshouse, Glasgow, United Kingdom. <sup>2</sup>NHS Greater Glasgow and Clyde, Glasgow, United Kingdom. <sup>3</sup>Homerton University Hospital NHS Trust, London, United Kingdom. <sup>4</sup>North Middlesex University NHS Trust, London, United Kingdom

#### **Abstract**

##### Background

Clostridium Difficile Infection (CDI) varies in severity and presents challenges in management. Whilst incidence is decreasing, the mortality rate in NHS Ayrshire & Arran is 10%. We evaluated if a new infection severity assessment sheet improved management.

##### Method

A retrospective case note review was performed on all cases of CDI, confirmed by clinical symptoms and laboratory sampling. Our audit assessed both predisposing factors and management. The first cycle ran from January-March 2018. The second cycle ran May-November 2018 after the introduction of the new severity assessment sheet.

##### Results

There were 20 episodes of CDI in the first cycle, and 38 episodes in the second cycle (n=58). Following introduction of the new severity assessment sheet CDI diagnosis, management and documentation improved. High-risk antibiotic use prior to CDI fell from 65% in the first cycle to 34% in the second cycle. Discussion of CDI diagnosis with relatives increased from 70% to 86.8%. Documentation of day 1 and 5 infection severity scores improved (50% to 57.9% and 10% to 31.6%, respectively). Improvements were noted in prompt stool sampling after symptoms (90% to 97.4%), fluid balance chart use (80% to 89.5%), stopping unnecessary antibiotics (58.3% to 81.3%) and documentation of daily assessment (5% to 23.7%).

##### Conclusion

The results highlight positive improvement in outcomes following a well-publicised introduction of an improved CDI proforma. Despite this, further intervention and monitoring is required to improve documentation of daily assessment in CDI. Additionally, there is still progress to be made to prevent unnecessary use of high risk antibiotics.

# Presenting Tuesday Evening

## Poster No 003

### **Clostridiodes difficile: Colonisation versus Infection - The importance of appropriate laboratory testing to minimise risk of overdiagnosis and overtreatment.**

Anne Marie Karcher<sup>1</sup>, KACSPER LICHOTA<sup>1</sup>, JENNIFER LEE<sup>2</sup>, BEN PARCELL<sup>1</sup>

<sup>1</sup>NHS TAYSIDE, DUNDEE, United Kingdom. <sup>2</sup>NHS DUMFRIES AND GALLOWAY, DUMFRIES, United Kingdom

#### **Abstract**

##### Background

*Clostridiodes difficile* (*C. difficile*) colonisation rates have been reported as ranging from 4-15% in healthy adults to 4-51% in long term care facilities. Inappropriate treatment for *C. difficile* colonisation alters gut microbiota and can consequently result in *C. difficile* Infection (CDI). Laboratory testing needs to aid diagnosis while at the same time minimising risk of overdiagnosis and overtreatment.

##### Methods

An audit was conducted of the number of patients with indeterminate and positive results between 01.09.16 and 31.08.18 to determine the impact of Scottish National *C. difficile* laboratory testing and CDI case definition Guidance re-inforcement in September/October 2017. A question was also added at sample requesting stage re Pseudomembranous colitis/Toxic megacolon to ensure appropriate testing.

##### Results

After Guidance re-inforcement, a rapid fall in number of indeterminate results (av. 34/month to 15/month) was observed. Decrease was most marked for GP patients (av. 12/month to 3/month). There was also a decrease in the number of patients with confirmed positive results (av. 9/month to 5/month).

##### Conclusion

Alignment with National Guidance resulted in significant reduction in patient indeterminate and positive results and assisted clinicians in the clinical diagnosis of CDI. There was also a reduction in the number of laboratory tests and repeat tests for indeterminate results. Therefore, this alignment with National Guidance resulted in Infection Prevention and Control Team, clinical and laboratory time and cost savings.

# Presenting Wednesday Evening

## Final category: Antimicrobial stewardship

Poster No 004

**Developing a novel paperless E-referral pathway for Infection clinic at a large teaching hospital, community and primary care in northwest England: A novel strategy to spearhead the trust antimicrobial stewardship programme.**

ACHYUT GULERI, RASHMI SHARMA, JILL MOON

BLACKPOOL TEACHING HOSPITALS NHS FOUNDATION TRUST, BLACKPOOL, United Kingdom

### Abstract

#### BACKGROUND:

UK's 5y (2019-24) national action plan on antimicrobial resistance(AMR) projects 1 death/3 seconds(global) by 2050, if AMR rise not tackled. Accurate diagnosis of infectious condition and prompt optimal antibiotic/s are corner stones of any antimicrobial stewardship(AMS), sepsis programme and reducing mortality. We present our experience of developing a novel paperless E-referral pathway for all infection consultations from hospital and primary care to spearhead the hospital AMS and sepsis programmes.

#### MATERIAL/METHODS:

Hospital webdesigners customized existing software application ([www.nervecentresoftware.com](http://www.nervecentresoftware.com)) & developed user friendly E-referral system (includes basic clinical details, referral urgency/coloured flag and grade/contact of submitter); it auto populates patient demographics and ward location from patient information system. Reports can be generated to query agreed parameters (&KPI). E-referrals accessible both on hospital computers or iPhone/iPAD.

#### RESULTS:

AMS (Apr18-Mar19): >13K ward/phone AMS interventions; total referrals:13,312; 9438(70.1%) responded in 60-min;11923(90%)120min; E-referrals/d: 30-80; Referral Peaks: 3pm & 11am; Referrals from hospital [10,709(80.2%)], GP/prim care [2654 (19.8%)]; Clinical areas: [eg. male cardiac:491(3.6%); HDU:793(5.9%), etc]; E-referrals addressed/consultant [eg. Consultant A(4590(34.3%), etc]. Details & graphs to be presented.

#### CONCLUSION:

E-referral pathway has spearheaded trust AMS & sepsis programmes. Urgent referrals are picked without delay; KPI of referral response within 60mins; significant reduction in calls for consultant Infection via switch board or medical secretaries; auditable workload figures for team to inform UKAS inspection, new consultant business cases or quality matrix; improved accountability and informs annual appraisal / job plan.

# Presenting Tuesday Evening

Poster No 005

## Using health literacy techniques to develop patient information for counselling on antibiotics courses.

Kiyah Beck<sup>1</sup>, Koulla Ioannou<sup>2</sup>, Sidrah Ahmed<sup>2</sup>, Syeda Nadia Zaman<sup>2</sup>, Gill Hawksworth<sup>2</sup>, Saima Afzal<sup>2</sup>, Sarah Frank<sup>2</sup>, Philip Howard<sup>3</sup>

<sup>1</sup>university of Huddersfield, Huddersfield, United Kingdom. <sup>2</sup>University of Huddersfield, Huddersfield, United Kingdom. <sup>3</sup>University of Leeds, Leeds, United Kingdom

### Abstract

#### Introduction

Increased education may improve awareness of antimicrobial resistance (AMR), however 43% of people aged 16-65 in England lack skills to understand health information<sup>1</sup>. This study aimed to improve patient knowledge on short course antibiotics using a patient information leaflet (PIL) incorporating Health Literacy (HL) techniques supporting the Governments' 5 year 2019 AMR strategy.

#### Method

This study received ethics approval. A revised Royal Pharmaceutical Society (RPS) checklist for Community Pharmacy PIL incorporating HL techniques was piloted, then used for 5-weeks as a counselling tool by 8 consenting community pharmacists. It was handed to patients during dispensing of short-course antibiotics, after which the pharmacists filled out a questionnaire. Patients receiving counselling using the PIL completed face to face questionnaires.

#### Results

106 patient questionnaires were completed.

94% of patients had taken antibiotics previously and 90% of these thought the counselling received using the PIL was easier to understand than previous counselling.

96% of patients agreed the PIL improved their knowledge on appropriate antibiotic use. 81% of patients intended to change their behaviour and thought the PIL had improved their antibiotic knowledge especially to "always finish a prescribed course of antibiotics". All patients stated the PIL was easy to follow.

#### Conclusion

This pilot suggests that patient behaviour can be influenced using structured counselling on AMR drawing on HL techniques.

#### References

1 Rowlands G, Protheroe J, et al. A mismatch between population health literacy and the complexity of health information: an observational study. *British Journal of General Practice*. 2015;65(635):e379-e386.

# Presenting Wednesday Evening

Poster No 006

## Using health literacy techniques to support pharmacist practice when counselling on antibiotics courses.

Kiyah Beck<sup>1</sup>, Koulla Ioannou<sup>1</sup>, Sidrah Ahmed<sup>1</sup>, Syeda Nadia Zaman<sup>1</sup>, Gill Hawksworth<sup>1</sup>, Saima Afzal<sup>1</sup>, Sarah Frank<sup>1</sup>, Philip Howard<sup>2</sup>

<sup>1</sup>University of Huddersfield, Huddersfield, United Kingdom. <sup>2</sup>University of Leeds, Leeds, United Kingdom

### Abstract

#### Introduction

Increased education may improve awareness of antimicrobial resistance (AMR)<sup>1</sup> however 43% of people aged 16-65 in England lack skills to understand health information<sup>2</sup>. This study aimed to improve patient knowledge on short course antibiotics using a patient information leaflet (PIL) incorporating Health Literacy (HL) techniques supporting the governments' 5 year 2019 AMR strategy.

#### Method

This study received ethics approval. A revised Royal Pharmaceutical Society (RPS) checklist for Community Pharmacy PIL incorporating HL techniques was piloted then used for 5-weeks as a counselling tool by 8 consenting community pharmacists. It was handed to patients during the dispensing of short-course antibiotics after which the pharmacists filled out a questionnaire.

#### Results

106 patients were counselled and all 8 pharmacists completed questionnaires on how the PIL supported their practice.

On a scale of 1 (not at all) to 5 (improved a lot), pharmacists scored how much they thought the PIL could improve patient's knowledge on appropriate antibiotic use. 63% of pharmacists (5/8) scored the PIL '5' or '4'.

63% of pharmacists (5/8) did not feel that the PIL took longer than their standard counselling. 66% (2/3) felt that the extra time was worthwhile.

#### Conclusion

Pharmacists believed written information using HL techniques led to improved AMR education at the point of antibiotic dispensing.

#### References

1. Health Education England. Tackling antimicrobial resistance: educational priorities London; 2018.
2. Rowlands G, et al A mismatch between population health literacy and the complexity of health information: an observational study. British Journal of General Practice [Internet]. 2015;65(635):e379-e386.

# Presenting Tuesday Evening

## Poster No 007

### How well are we doing in diagnosing and treating UTI in older people?

Joanne Malkin, Jill Ross

County Durham and Darlington NHS FT, Durham, United Kingdom

#### Abstract

##### Background

There is very good evidence that the use of a urine dipstick in the diagnosis of UTI in older people is not of value and may indeed cause harm (e.g. inappropriate courses of antibiotics, missed alternative diagnoses, etc.) This year's AMR CQUIN has focussed on compliance with NICE / PHE guidelines. The results presented here are for the first quarter at CDDFT hospitals.

##### Methods

Patients were initially identified prospectively by ward pharmacists. However, this yielded too few patients and our data collection method was amended to retrospective collection, based on a primary discharge code of N39.0.

##### Results

- 60% urine dipstick used inappropriately (target <10%)
- 52% treatment follows NICE guidelines / based on recent sensitivities / local guidelines (target >90%)
- 60% patients were prescribed coamoxiclav despite not being in NICE / PHE guidelines for lower UTI
- 86% MSU sent (target >90%)
- 84% diagnosis based on symptoms / signs consistent with UTI (target >90%)

##### Conclusion

Despite numerous efforts (posters, walk-arounds, teaching) over the last 2 years to educate staff regarding appropriate use of urine dipsticks and antibiotics, our results were unsatisfactory. To remedy this, we have implemented the action plan described below, aimed at engendering an improvement in compliance with the guidelines and patient management.

1. Educational screensavers on computers
2. Removal of dipstick stickers from MAU clerking
3. Change of dipsticks to ones with no leucocytes and nitrites
4. Education and engagement of MAU & ED ward staff
5. Additional of new category to antibiotic formulary (?UTI/?LRTI not septic) to counter excessive coamoxiclav use



# Presenting Wednesday Evening

## Poster No 008

### Experience of pharmacist-led antimicrobial stewardship ward rounds in a regional hospital

Stuart Bond, Kathryn Ashton, Jade Lee-Milner, Damilola Mustapha, Rachael Hinchliffe, Nicola Walker

Mid Yorkshire Hospitals NHS Trust, Wakefield, United Kingdom

#### Abstract

##### Background:

Antimicrobial stewardship ward rounds and phone advice are fundamental to improvement of infection treatment and prevention in hospitals. In response to a local and national shortage of consultant medical microbiologists, a pharmacist-led antimicrobial stewardship service was established.

##### Methods:

Antimicrobial stewardship interventions in a large regional hospital were analysed from 8 January 2018 to 14 March 2019. Collaborative ward rounds were conducted with infection prevention and control nurses, and microbiology staff when available. *Ad hoc* ward rounds and phone interventions (via a dedicated “antibiotic advice hotline”) were also conducted, with most referrals coming from junior doctors and ward pharmacists. The commonest clinical areas visited were elderly care, respiratory and general surgery.

##### Results:

1507 antimicrobials were reviewed from 1006 interventions (16 per week). Antimicrobials most reviewed were piperacillin/tazobactam (n=152; 10%), metronidazole (n=152), co-amoxiclav (n=140; 9%), teicoplanin (n=137, 9%) and gentamicin (n=116; 8%). The commonest organisms were *Escherichia coli* (n=115), *Staphylococcus aureus* (n=95) and *Clostridium difficile* (n=52). The most common recommendations were intravenous to oral switch (n=185; 18%), continue (n=175; 17%), escalate (n=136; 14%) and review dose (n=97; 10%). Antimicrobials were optimised for discharge in 270 cases, through oral switch, home intravenous antimicrobial referral or cessation.

##### Conclusion:

The results demonstrate the value of novel antimicrobial stewardship approaches that are required in today’s NHS given shifts in staff availability and recognising advanced clinical practice among non-medical staff. Future planned interventions will focus on improving the home intravenous antimicrobial referral and review process.

# Presenting Tuesday Evening

## Poster No 009

### **Low or no CRP at the point of admission to a medical admissions unit is associated with a low rate of 48-hour antimicrobial review amongst patients prescribed antibiotics**

Amanda Hill<sup>1</sup>, Eloise Hamon<sup>2</sup>, Melanie Nana<sup>1</sup>, Sian Price<sup>1</sup>, Noel Craine<sup>3</sup>, Brendon Healy<sup>4</sup>

<sup>1</sup>Princess of Wales Hospital, Bridgend, United Kingdom. <sup>2</sup>Cardiff University, Cardiff, United Kingdom.

<sup>3</sup>Public Health Wales, Bangor, United Kingdom. <sup>4</sup>Public Health Wales, Cardiff, United Kingdom

#### **Abstract**

##### Introduction:

Antibiotic resistance is rising and multi-resistant organisms are readily being identified; therefore fear of mortality rates rising due to infection is becoming a genuine prospect. We sought to measure clinical review post antimicrobial prescription in two acute hospitals in Wales to establish whether review is undertaken at 48-hours and whether likelihood of clinical review taking place depends on C reactive protein (CRP) levels on admission.

##### Methods:

An audit across two hospitals in South Wales assessing compliance of antimicrobial review as recommended by NICE guidelines was undertaken over a three week period. In addition, univariate odds ratios for 48-hour referral stratified by CRP test results (excluding patients with no CRP test) were calculated in a logistic regression model using the high CRP group as the referent. Following initial results intervention (education and prompt stickers) were introduced to prompt 48-hour review.

##### Results:

139 patients were included in the pre-intervention audit from both sites. 53% were reviewed at 48 hours. Initial interventions demonstrated an improvement in compliance in all CRP categories. In the logistic regression analysis setting the highest CRP group (CRP  $\leq 100$ ) as referent showed that the likelihood of a 48 hour review was lower in patients with lower CRP test results, or no CRP test than those with a CRP of  $\geq 100$ .

##### Conclusion:

Patients with low or no CRP on admission are less likely to have their antimicrobial prescriptions reviewed when compared 48 hours. Intervention should continue to be sought to raise awareness of this.

# Presenting Wednesday Evening

## Poster No 010

### Utilising data held within ePACT2 to monitor and influence antimicrobial prescribing within secondary care outpatient clinics

Ryan Ashley Hamilton, Allister Grant

University Hospitals of Leicester NHS Trust, Leicester, United Kingdom

#### Abstract

#### Background

Assurance and intervention is needed around antimicrobial prescribing in secondary care outpatient settings, which has increased by 21% in 5-years. Use of NHS FP10 prescriptions impedes timely monitoring of prescribing. This project aimed to develop an efficient method for monitoring and reporting outpatient prescribing on FP10 forms.

#### Methods

A Microsoft Excel spreadsheet was developed to allow direct importing of antimicrobial prescribing data from ePACT2, which then automatically updates charts of prescribing activity using VLookup formulae and pivot charts. Reports were developed in Microsoft Word that directly pull updated charts from the spreadsheet described.

#### Results

The method allows rapid calculation and collation of DDDs and creates charts for assessing monthly antimicrobial prescribing trends. The reports highlight areas for review and action, which have driven engagement in antimicrobial stewardship across the organisation. Unexpectedly, these reports heightened nurses' awareness of antimicrobial stewardship (AMS), who now seek reassurance on, and challenge, antimicrobial prescribing at the time of prescribing. The process takes less than 20-minutes on average (versus 3-hours previously), freeing up antimicrobial pharmacists' time to interrogate prescribing trends and undertake clinical duties. This method also allows potentially inappropriate prescriptions to be identified and pulled from NHS BSA sooner, so that individual prescribers and teams can be targeted for intervention and reflection.

#### Conclusion

This method allows efficient reporting of antimicrobial prescribing, enables stewardship teams to focus interventions on prescribers and teams, and drives engagement in antimicrobial stewardship. This method could be adapted by other organisations to monitor and interrogate antimicrobial prescribing.

# Presenting Tuesday Evening

## Poster No 011

### **What's in a label? Can use of a questionnaire-based tool identify patients that may benefit from antimicrobial allergy 'de-labelling'.**

Laura Elliott<sup>1,2</sup>, Vivian Auyeung<sup>1</sup>, Paul Wade<sup>2,1</sup>

<sup>1</sup>King's College London, London, United Kingdom. <sup>2</sup>Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

#### **Abstract**

##### **Background**

Being labelled as "allergic" to an antimicrobial (commonly penicillins) can lead to worse clinical outcomes and increase antimicrobial resistance. Unclear or inappropriate allergy documentation contributes to this issue so clarifying "allergy" status is important to optimise clinical outcomes.

##### **Methods**

The study was conducted at St Thomas' Hospital, a large teaching hospital in London. An antimicrobial allergy assessment process, consisting of a researcher-developed and administered questionnaire, a review of patient medical records and categorisation of the drug allergy 'label', was applied to eligible patients from selected wards. Recommendations for allergy 'de-labelling' and referrals were given based on patient categorisation.

##### **Results**

Sixty assessments were completed during the study. Six patients (10%) were identified as unlikely to have a true allergy and could potentially be 'de-labelled'. A further thirty-seven patients (61.7%) were identified as eligible for allergy referral and testing. The allergy 'labels' of twenty-seven patients (45%) led to them receiving second-line antibiotic therapy. Twenty-two patients (34.7%) had inconsistencies in their allergy documentation across the 3 main electronic clinical systems.

##### **Conclusion**

This study demonstrated that the use of a simple, standardized, pharmacy-led approach to antimicrobial allergy assessment could lead to some patients being 'de-labelled' outside of specialist allergy settings. The implementation of this approach could immediately bring about improvements in antimicrobial usage and patient outcome.

# Presenting Wednesday Evening

## Poster No 012

### UK Paediatric Antimicrobial Stewardship: a call for action

Stefania Vergnano<sup>1,2</sup>, Faye Chappell<sup>3</sup>, Alasdair Bamford<sup>4,5</sup>, Alicia Demirjian<sup>6</sup>, Katja Doerholt<sup>7</sup>, Marieke Emonts<sup>8,9</sup>, Anu Goenka<sup>10</sup>, Laura Jones<sup>11</sup>, Jethro Herberg Herberg<sup>12</sup>, Lucy Hinds Hinds<sup>13</sup>, Orlagh McGarrity<sup>14</sup>, Paul Moriarty<sup>15</sup>, Mitul Patel<sup>16</sup>, Stephane Paulus<sup>17</sup>, David Porter<sup>18</sup>, Kate Stock<sup>19</sup>, Sanjay Patel<sup>20</sup>

<sup>1</sup>Bristol Royal Children Hospital, Bristol, United Kingdom. <sup>2</sup>University of Bristol, Bristol, United Kingdom. <sup>3</sup>Evelina Children Hospital, London, United Kingdom. <sup>4</sup>Department of Paediatric Infectious Diseases, Great Ormond Street Hospital for Children NHS Trust, London, United Kingdom. <sup>5</sup>UCL Great Ormond Street Institute of Child Health, London, United Kingdom. <sup>6</sup>Paediatric Infectious Diseases and Immunology, Evelina Children Hospital, London, United Kingdom. <sup>7</sup>Paediatric Infectious Diseases and Immunology Department, St George's University Hospital, London, United Kingdom. <sup>8</sup>Paediatric Immunology, Infectious Diseases and Allergy Department, Great North Children's Hospital, Newcastle upon Tyne, United Kingdom. <sup>9</sup>Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne, United Kingdom. <sup>10</sup>Royal Manchester Children Hospitals, Manchester University Hospital NHS Foundation Trust, Manchester, United Kingdom. <sup>11</sup>Royal Hospital for Sick Children, Edinburgh, United Kingdom. <sup>12</sup>Imperial College London, London, United Kingdom. <sup>13</sup>Sheffield Children NHS Foundation Trust, Sheffield, United Kingdom. <sup>14</sup>Great Ormond Street Hospital, London, United Kingdom. <sup>15</sup>Royal Belfast Hospital for Sick Children, Belfast, United Kingdom. <sup>16</sup>Birmingham Women's and Children's NHS Foundation Trust, Birmingham, United Kingdom. <sup>17</sup>John Radcliffe Hospital, Oxford, United Kingdom. <sup>18</sup>Alder Hey Children Hospital, Liverpool, United Kingdom. <sup>19</sup>Royal Hospital for Children, Glasgow, United Kingdom. <sup>20</sup>Paediatric Infectious Diseases and Immunology Department, Southampton Children Hospital, Southampton, United Kingdom

#### Abstract

**Background** – Paediatric antimicrobial stewardship (PAS) networks exist in the USA and Australia but not in the UK. We sought to capture a snapshot of the current PAS landscape across UK children's hospitals.

**Methods** A survey of PAS activities was conducted in tertiary children's hospitals.

**Results** – Infectious disease or microbiology consultants responded to the survey (n=15). All hospitals had neonatal, paediatric intensive care and surgical patients. All centres provided a PAS education programme for doctors, 7 for nurses and 9 for pharmacists as well. All centres had empirical antimicrobial prescribing guidelines. All centres with a paediatric infectious diseases (PID) team (11/15) used "audit and feedback" rounds, although their frequency and coverage varied. The PAS teams mostly included a PID consultant and/or microbiology consultants and a pharmacist. Three centres also had a nurse covering also the paediatric out-patient antibiotic treatment programme. Funding for PAS were inconsistent: Great Ormond Street Hospital had secured a dedicated full-time paediatric microbiologist, antimicrobial pharmacist and PID consultant with a ratio of 1/453 in-patient beds. 9 centres did not have dedicated funding for a paediatric antimicrobial pharmacist, 7 did not have funding for a paediatric infectious disease consultant. Only 2 hospitals had microbiology consultant time for paediatric audit and feedback.

**Conclusion** – PAS programmes in the UK are limited, funding is inconsistent and their set up is variable, even in tertiary children's hospitals with a strong interest in infectious diseases. We propose a national PAS network to advocate for more consistency and research into the implementation of PAS programmes.

# Presenting Tuesday Evening

## Poster No 013

### Collation of resources within a regional antimicrobial pharmacy group

Stuart Bond, Jade Lee-Milner

Mid Yorkshire Hospitals NHS Trust, Wakefield, United Kingdom

#### Abstract

**Background:** Previous regional antimicrobial meetings identified duplication of antimicrobial stewardship work in Acute trusts. In 2018, collation of guidelines for hospital acquired pneumonia, community acquired pneumonia and urinary tract infections led to creation of exemplar guidelines. All documents were emailed, which was inefficient due to volume, with no central repository that could be accessed across sites. Given the regional shortage of microbiologists, easy access to job descriptions and business cases was considered essential to improvement of pharmacy staff resources regionally.

**Aim:** To create an open access regional hub for antimicrobial resources within Yorkshire and the Humber using the Specialist Pharmacy Service (SPS) website.

**Methods:** The Yorkshire and Humber Antimicrobial Pharmacy Group's objective is to continuously improve antimicrobial stewardship and infection management through networking, sharing best practice, learning, peer support and joint working/initiatives. Starting in March 2019, resources were submitted to the SPS website.

**Results:** A total of nine job descriptions were uploaded, along with members of the group, educational links such as the #todipornottodip campaign, terms of reference, annual workplan, meeting agendas and a brief summary of the group's objectives and regional geography.

**Conclusion:** The SPS website has facilitated a more efficient sharing of regional antimicrobial stewardship resources. Further work is warranted for sharing education resources, and business cases that don't contain commercial information. As the site is open access, a decision was made to continue emailing meeting minutes.

# Presenting Wednesday Evening

## Poster No 014

### Electronic medicine dispensing cabinet usage reporting as a tool for hospital antimicrobial stewardship

Anne Duguid, David Romanes, Edward James

NHS Borders, Melrose, United Kingdom

#### Abstract

Multidisciplinary antimicrobial ward rounds have been demonstrated to be effective in promoting good antimicrobial stewardship (AMS) within hospitals. The ability to review patients' current antibiotic treatment and intervene in a timely fashion is essential in this process. Hospital Electronic Prescribing and Medicines Administration (HEPMA), where available, is an invaluable aid in this but, for many Health Boards, its introduction is still a long time in the future.

In the absence of HEPMA, other surrogates can be used, such as pharmacy stock software, to identify patients requiring AMS review e.g. for use of "alert" antibiotics. These systems would not, however, provide patient-level information from stock issues to ward areas.

This study investigated the potential of ward electronic medicine dispensing cabinets to provide patient-level data on alert antibiotic use in a hospital where HEPMA was not in use. Daily reports on "alert" antibiotic issues were sent via automated message to the Consultant Microbiologist and Antimicrobial Pharmacist. Patients' antibiotic use was then reviewed and documented using ICNET software.

Data from AMS ward rounds over a period prior to and after the introduction of electronic cabinet reporting were analysed. A 50% increase in the identification of alert antibiotic issues was seen after the introduction of electronic cabinet reporting. Over a one month period, time for AMS intervention was reduced by an average of 8h (range 3.5-28.5h) with the use of cabinet reporting.

Electronic cabinet reporting has been shown to be a useful tool for facilitating good antimicrobial stewardship in a general hospital.

# Presenting Tuesday Evening

## Poster No 015

### Outcomes of an admission avoidance scheme for diabetic foot infections via OPAT

Kelly Atack, Annabelle Waterhouse

Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

#### Abstract

##### Background

The 2019 National Diabetes Foot Care Audit shows 2.7% of patients with a diabetic foot ulcer underwent major amputation within six months and 14% died within twelve months. Our OPAT service treats such patients referred from inpatient wards and via the limb salvage clinic as an admission avoidance scheme. A review compared outcomes between these referrals and the national data.

##### Methods

The OPAT database identified patients referred via an inpatient ward and the clinic. Each patient was then reviewed for each of the following criteria:

1. Was the patient alive and ulcer free at 12 weeks?
2. Had the patient had a major amputation within six months?
3. Was the patient still alive after 12 months?

##### Results

100 patients were reviewed; 50 referred by inpatient wards and 50 referred by the clinic as admission avoidance patients.

In both categories, 94% of patients were alive after twelve weeks, with 12% being ulcer-free in the inpatient category compared with 18% in the admission avoidance group. 6% had a major amputation within six months in the inpatient group, compared with none in the admission avoidance group. 16% of patients in the inpatient group had died within 12 months of treatment, compared with 10% of admission avoidance patients.

##### Discussion

OPAT patients receiving treatment for diabetic foot infections have similar outcomes to those in the national audit. No extra harm is being done to those referred to OPAT without hospital admission.



# Presenting Wednesday Evening

## Poster No 016

### Safe, sustained reduction in meropenem and piperacillin/tazobactam use in a medical high dependency unit

Paul Robertson<sup>1</sup>, Ursula Altmeyer<sup>1</sup>, Kayleigh Hamilton<sup>1</sup>, Natalie Rennie<sup>1</sup>, Richard Cottrell<sup>1</sup>, Gethin Williams<sup>2</sup>

<sup>1</sup>University Hospital Crosshouse, Kilmarnock, United Kingdom. <sup>2</sup>Raigmore Hospital, Inverness, United Kingdom

#### Abstract

There is widespread overuse of ultra-broad spectrum antibiotics (UBSA) such as meropenem and piperacillin/tazobactam (PTZ). Reductions in their use are needed to preserve their effectiveness.

Using electronic prescribing data we recorded administrations of meropenem and PTZ per month in a 12-bed medical high dependency unit (HDU) from April 2016 to March 2019. During this time there were three interventions (an antimicrobial stewardship round began in March 2017, PTZ was removed from empirical prescribing guidelines in May 2017, and a restricted antimicrobial audit began in June 2017). The latter two interventions were prompted by a national PTZ shortage.

In 2016/17 meropenem and PTZ use was 56 and 113 daily defined doses/100 acute occupied bed days (AOBD) respectively, falling to 32 and 60 in 2017/18, and to 25 and 38 in 2018/19. This represented a 55% reduction in meropenem use and a 77% reduction in PTZ use over 2 years. The drop in use was due to both fewer patients being started on UBSA and shorter durations of treatment. The use of 4C antibiotics (clindamycin, cephalosporins, co-amoxiclav and ciprofloxacin/levofloxacin) did not increase. There was no increase in unit mortality, or change in the prevalence of ESBL-producing organisms.

We describe a multi-modal intervention that, coupled with strong clinical engagement, resulted in a safe, sustained reduction in both meropenem and PTZ use in a medical HDU, without using more 4C antibiotics. We hypothesize that “top down” policies helped reduce UBSA initiation, whereas a “bottom-up” ward-based initiative helped review and stop unnecessary use.

# Presenting Tuesday Evening

## Poster No 017

### Utilisation of Antimicrobial Stewardship (AMS) Electronic Interventions (i-Vents) as a metric of pharmacy AMS at Cambridge University Hospitals (CUH) NHS Foundation Trust

Claudia Brown, David Enoch, Christianne Micallef

Addenbrookes Hospital, Cambridge, United Kingdom

#### Abstract

##### Background:

The aim of the project was to identify the contribution clinical pharmacists make to antimicrobial stewardship (AMS) at CUH. The EPIC e-hospital system in place allows pharmacists to record interventions (i-Vents) electronically; these can be used as a metric of pharmacist AMS.

##### Method:

A bespoke electronic report of all AMS i-Vents which occurred in April 2018 was generated using EPIC. Each i-Vent was categorised by type, clinical speciality, grade of pharmacist making the i-Vent and whether the i-Vent was following on from a previous one. The antimicrobials(s) mentioned in each i-Vent were also recorded.

##### Results:

During April 2018 554 pharmacist i-Vents were recorded. I-Vent types included therapeutic drug monitoring (31%), dose optimisation (22%), course length optimisation (12%), interaction and contraindication management (2%) and patient counselling (0.2%). AMS i-Vents were recorded for patients under the care of 42 clinical specialties including neonatology (12%), diabetes and endocrinology (11%) and respiratory (8%). I-vent numbers increased with seniority of pharmacist with band 8 pharmacists making the most interventions (44%) and band 6 pharmacists making the fewest (16%). There were 645 separate references to a total of 53 individual antimicrobial agents. The top three drugs mentioned in i-Vents were vancomycin (30%), gentamicin (12%), and ciprofloxacin (8%). Follow-up i-Vents constituted 111 (20%) of all recorded i-Vents.

##### Conclusion:

Our findings demonstrate that pharmacists contribute significantly to AMS at CUH, especially on therapeutic drug monitoring and dose-optimisation issues. We suggest that AMS i-Vents are a reliable metric for monitoring AMS pharmacist activities, related directly to patient care.

# Presenting Wednesday Evening

## Poster No 018

### A 12-month follow-up looking at improvements to adult inpatient gentamicin prescribing and the role of the antimicrobial pharmacist

Rachael Hinchliffe

Mid Yorkshire Hospitals, Wakefield, United Kingdom

#### Abstract

##### Background

Audits at Mid Yorkshire NHS Trust have identified inappropriate prescribing of gentamicin. Antimicrobial stewardship (AMS) interventions in hospital have increased adherence to antimicrobial prescribing policies<sup>2</sup>.

##### Methods

Pre-intervention data were collected by the antimicrobial pharmacist in January 2018. Interventions were then completed and included: oral presentations, targeted reviews and teaching sessions. Inappropriate indications or doses received routine AMS intervention. Following interventions a second audit was completed in May 2018 to measure improvements in prescribing. A second intervention was the introduction of a 5 day review service of prescribed gentamicin and a third audit was completed in August 2019 to demonstrate a sustained improvement.

##### Results

In total, 25 patients were audited in January 2018, 24 patients in May 2018 and 29 patients in August 2019. The three groups were similar for age, sex and reason for admission. The proportion of patients receiving an appropriate initial dose of gentamicin increased from 13/25 patients (54%) to 19/24 patients (79%) and again to 27/29 patients (93%). The proportion of patients that had the subsequent dose of gentamicin prescribed appropriately increased from 9/25 patients (36%) to 20/24 patients (83%) and again to 29/29 patients (100%).

##### Conclusions

This project demonstrated a sustained improvement in gentamicin prescribing following a series of pharmacist-led education and training sessions, one to one training, presentations at governance group meetings and the introduction of a 5 day pharmacist review service. The sample was limited to those patients who had levels taken.

# Presenting Tuesday Evening

## Poster No 019

### **A large-scale pragmatic automated audit of the appropriateness of antibiotics initiated for presumed community-acquired pneumonia using a novel algorithmic approach**

Alexander Bow<sup>1</sup>, Jessica Lilley<sup>2</sup>, Reem Santos<sup>2</sup>, Michael Murphy<sup>3</sup>, Luke Bedford<sup>4</sup>, Clare Sander<sup>2</sup>, Theodore Gouliouris<sup>2</sup>

<sup>1</sup>University of Cambridge, Cambridge, United Kingdom. <sup>2</sup>Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. <sup>3</sup>Glasgow Royal Infirmary, Glasgow, United Kingdom. <sup>4</sup>East Suffolk and North Essex NHS Foundation Trust, Ipswich, United Kingdom

#### **Abstract**

##### **Background**

Audit is a fundamental part of antimicrobial stewardship, but this has traditionally been labour-intensive. The advent of fully electronic records (EPIC) at Cambridge University Hospitals (CUH) presents novel opportunities for large-scale automated data analyses and feedback. We developed and validated an algorithm to audit the appropriateness of prescriptions initiated for presumed community-acquired pneumonia (CAP).

##### **Methods**

We developed an algorithm that extracts prescription and clinical data from EPIC, calculates CURB-65 scores, and assesses the appropriateness of antibiotics with an indication of CAP against Trust guidelines based on predefined rules. Clinical data included age, gender, blood results, vital signs, NEWS-2 score, MRSA status, penicillin allergy and pregnancy status. Prescriptions were limited to 48 hours from admission. The accuracy of the algorithm was validated in a representative sample of 30 patients.

We present data on all prescriptions initiated for CAP admitted to CUH between September 2018 and June 2019.

##### **Results**

On validation, the algorithm calculated the CURB-65 score with an accuracy of 97% and correctly categorised antibiotic appropriateness in 98.5% of cases. Only 15% of patients had a CURB-65 score documented in the notes.

The algorithm evaluated 4,307 prescriptions in 2,198 patients. Appropriateness was significantly better in CURB-65 scores of 2-5 (83.7%) versus 0-1 (33.5%) largely due to over-prescription of co-amoxiclav in the latter.

##### **Conclusion**

This algorithm enables large-scale analysis of prescriptions initiated for CAP with high accuracy automating the audit cycle. An automatically calculated CURB-65 score has the potential to reduce over-prescribing of co-amoxiclav and should be evaluated in the future.

# Presenting Wednesday Evening

## Poster No 020

### Sepsis Six implementation on a general surgical ward. More work to be done.

Aoife Reilly<sup>1</sup>, Ali Ali<sup>1</sup>, Mairead Skally<sup>2</sup>, Emma Skelly<sup>1</sup>, Leah Gaughan<sup>2</sup>, Vida Hamilton<sup>3,2</sup>, Alexandra Troy<sup>2</sup>, Hilary Humphreys<sup>2,1</sup>, Deborah McNamara<sup>2,1</sup>, Fidelma Fitzpatrick<sup>2,1</sup>

<sup>1</sup>Royal College of Surgeons in Ireland, Dublin, Ireland. <sup>2</sup>Beaumont Hospital, Dublin, Ireland. <sup>3</sup>University Hospital Waterford, Dublin, Ireland

#### Abstract

##### Background:

Sepsis can lead to significant morbidity and mortality if not recognised and managed early. On the basis of national mortality reports, Irish guidelines recommend that patients at risk of neutropenia, patients with sepsis or those with a systemic inflammatory response (SIRS) with one plus co-morbidity should receive Sepsis Six. We assessed the implementation of the Sepsis Six on a surgical ward in our institution.

##### Methods:

All inpatients on a surgical ward in July 2018 were prospectively assessed for the presence of infection and sepsis. If the Sepsis Six was required, implementation of each of the Sepsis Six elements was recorded.

##### Results:

Of 164 patients, 40.2% (66/164) developed an infection of whom 47% (31/66), met the criteria for requiring Sepsis Six. Of these, 7.3% (12/164) patients had sepsis, with 3% (5/164) developing septic shock. Patients required Sepsis Six for the following reasons: <sup>3</sup>1 co-morbidity and <sup>3</sup>2 SIRS criteria ( $n=19$ ); new onset organ failure ( $n=12$ ) and neutropenic risk( $n=0$ ). Only 12.9% (4/31) patients received all of the Sepsis Six elements within one hour; 77.4% (24/31) received some and 9.67% (3/31) did not receive any elements. Blood cultures were taken in 54.8% (17/31) of cases but only 32.3% (10/31) patients had their lactate level checked.

##### Conclusion:

Further research action is required to better understand and improve Sepsis Six implementation. This should facilitate improved sepsis recognition and enhance patient care.

# Presenting Tuesday Evening

## Poster No 021

### **Associations between declining antimicrobial use in primary care in Scotland and patient satisfaction and hospitalisation due to infection: a longitudinal study of greater than five million patients**

Isobel Guthrie<sup>1</sup>, Charis Marwick<sup>2</sup>

<sup>1</sup>St Andrews, St Andrews, United Kingdom. <sup>2</sup>Dundee, Dundee, United Kingdom

#### **Abstract**

**Background.** Scottish antimicrobial prescribing in the community has fallen since 2012, but this could have unintended consequences. The aim was to examine associations between changes in antibiotic prescribing in primary care and hospital admissions and patient satisfaction.

**Methods.** Data for 877 Scottish general practices with 5.1 million patients were provided by NHS National Services Scotland. Practices were classified into four equal groups (quartiles) in terms of change in total antibiotic prescribing (rate/1000 registered patients in each quarter) 2012-2018. Changes in hospital admission with infection were examined comparing the four groups. Multivariate regression examined associations between change in antibiotic prescribing and patient satisfaction with the practice using national survey data.

**Results.** Across Scotland, primary care antibiotic prescribing decreased by 15% from 194.1 (95%CI 193.8-194.4) in Q1 2012 to 165.3 (95%CI 165.0-165.6) in Q2 2012, with considerable variation between practices (non-significant increase of 0.22 prescriptions/1000/quarter [ $p=0.49$ ] for the quartile of practices with least reduction in antibiotic prescribing, vs reduction of -2.95 prescriptions/1000/quarter [ $p<0.001$ ] for quartile with the largest reduction). Rates of hospital admissions with infection increased over the time period but there were no significant association with changes in antibiotic prescribing. Patient satisfaction decreased over the period, but change in antibiotic prescribing was not associated with patient satisfaction.

**Conclusion.** There have been clinically significant reductions in Scottish primary care antibiotic use since 2012, varying considerably between practices. Longitudinal analysis of Scotland-wide practice level data found no associations between practice-level reductions in primary care antibiotic prescribing and hospital admissions or patient satisfaction.

# Presenting Wednesday Evening

Poster No 022

## Enough is enough – is it time for the Scottish Antimicrobial Prescribing Group (SAPG) to develop the third age of antimicrobial stewardship in primary care in Scotland?

william malcolm<sup>1</sup>, linsey baxter<sup>2</sup>, megan mcnicol<sup>2</sup>, Jacqueline Sneddon<sup>3</sup>

<sup>1</sup>Health Protection Scotland, NHS National Services Scotland, Glasgow, United Kingdom. <sup>2</sup>Information Services Division, NHS National Services Scotland,, Glasgow, United Kingdom. <sup>3</sup>Scottish Antimicrobial Prescribing Group, Healthcare Improvement Scotland,, Glasgow, United Kingdom

### Abstract

#### Background

From 2008 the SAPG focused on ‘what to prescribe’ to tackle *Clostridium difficile* infection and from 2013 on ‘whether to prescribe’ to tackle unnecessary prescribing for self-limiting infections. Following these successes SAPG is now moving to the age of ‘how much to prescribe’ to ensure correct duration of therapy. We aimed to compare current prescribing practice with guidance from Public Health England (PHE)/NICE which recommends five days’ treatment for most common community respiratory infections (RTI).

#### Methods

The durations of antibiotic courses for treatment of respiratory tract infections was derived from data on dispensed prescriptions in 2018 from the Prescribing Information System, a national database of all NHS prescriptions dispensed in Scotland. Observed course durations were compared to course lengths recommended by PHE/NICE and modelling was undertaken on the impact on antibiotic use if durations were in line with guidance.

#### Results

For antibiotics recommended for RTI, the most common length of treatment used was seven days. For amoxicillin the proportion of five day prescriptions varied across health boards from 1.8% to 68.7%. Modelling estimated if 75% of seven day prescriptions for antibiotics recommended for RTI were changed to five days this would deliver a 4.1% reduction in antibiotic use.

#### Conclusion

SAPG has agreed to lead work to encourage the use of five day courses of antibiotics where indicated. Switching to five day courses would support reduction in total antibiotic use to achieve the ambitions of the UK AMR National Action Plan.

# Presenting Tuesday Evening

## Poster No 023

### Carbapenem stewardship in a large teaching English hospital - are we improving?

Abimbola Olusoga, Philip Howard, Caroline Walker, Kelly Atack, Annabelle Waterhouse

Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

#### Abstract

##### Background:

Overuse of antibiotics has been linked to the global growth of antimicrobial resistance (AMR). In 2018, increase in meropenem usage in our hospital revealed that we achieved the “Start Smart” but not “Then Focus” element. Following revised carbapenem stewardship, we aimed to evaluate the adherence to guidelines, by monitoring patients initiated on meropenem.

##### Methods:

As part of the antimicrobial stewardship (AMS) at our 1800-bed teaching hospital, carbapenem stewardship was revised in September 2018 and required consultant approval for all carbapenem initiation or continuation following specialist advice. Meropenem prescriptions in adult and paediatric patients were generated from the electronic prescription system and reviewed daily for one week in August 2019 to ascertain if prescribed in line with guideline recommendations or on the advice of microbiology or infectious diseases.

##### Results:

Sixty patients were reviewed. Microbiology or Infectious Diseases recommendation was obtained in 37% of patients. 95% had samples taken where blood cultures accounted for 85% but over a third of these had no growth reported. Meropenem was initiated empirically in 50% of patients mainly for neutropenic sepsis while 28% were culture directed. 35% of patients were escalated from piperacillin-tazobactam of which 57% had neutropenia while de-escalation occurred in 10%.

##### Conclusion:

AMR is related directly to antibiotic use at a patient level. Our revised strategy resulted in a reduction of total carbapenem DDD/1000 Admission from 128 (June 2018) to 87 (June 2019) through improved adherence to guideline and infection specialists recommendations however more work is required to promote switch to narrower-spectrum choice.



# Presenting Wednesday Evening

Poster No 024

## Do Results from the Microbiology Laboratory lead to Appropriate Management of Uncomplicated Lower Urinary Tract Infections?

Lucas Brammar, Isabel Baker

Weston General Hospital, Weston-Super-Mare, United Kingdom

### Abstract

#### BACKGROUND

There has been a national drive to improve antimicrobial stewardship in the diagnosis and management of uncomplicated lower urinary tract infections (UTIs). While much attention has been paid to the initial management in hospital, there is little evidence of how treatment is rationalised or altered in response to results from the laboratory.

#### METHODS

We undertook a retrospective analysis of medical records, including patients diagnosed with uncomplicated lower UTI whilst in hospital. Data was collected on whether a urine sample was sent to the laboratory, the result was documented, which subsequent actions were taken by clinical teams and their appropriateness.

#### RESULTS

All the patients received antibiotics for a lower UTI. 55% of patients had documented symptoms of a UTI, the remainder were commenced due to a suspected UTI in the absence of localising clinical symptoms. 86% had an MSU sample sent to the laboratory. In all cases, clinicians had viewed these results. In 57%, the findings of the MSU were documented. 38% of all results were not acted on appropriately, with 19% of those continuing antibiotics unnecessarily, 24% not narrowing down therapy and 12% not changing antibiotics in response to resistant isolates.

#### CONCLUSION

Whilst correct clinical investigations may be sent and reviewed in the management of uncomplicated UTIs, the results of these are often not documented in the patient's record and a significant proportion of these results are not acted on appropriately.

# Presenting Tuesday Evening

## Poster No 025

### Review of antibiotic prophylaxis for the prevention of surgical site infection in low and middle income countries (LMICs)

Lesley Cooper, Jacqueline Sneddon

Healthcare Improvement Scotland, Glasgow, United Kingdom

#### Abstract

##### Background

The Scottish Antimicrobial Prescribing Group (SAPG) is supporting two hospitals in Ghana via a Fleming Fund healthcare partnership to develop antimicrobial stewardship. Initial intelligence gathering suggests that antibiotic prophylaxis to prevent surgical site infection (SSI) is suboptimal. To inform a quality improvement programme we have reviewed the evidence for use of surgical prophylaxis in LMICs including staff behaviours and attitudes.

##### Methods

MEDLINE, Embase, Cochrane, CINHALL and Google Scholar were searched from inception to 22 July 2019 for trials, audits, guidelines and systematic review in English. Grey literature, websites and reference lists of included studies were searched. The following data were extracted; study characteristics, interventions, outcomes and recommendations. In view of heterogeneity between studies descriptive analysis was conducted.

##### Results

Of 185 records screened, 26 studies related to SSI and timing of antibiotic prophylaxis in LMICs were included. The incidence of SSI is significantly higher in LMICs compared with high income countries, recording of infection surveillance data is poor and a lack of local guidelines for antibiotic prophylaxis. Several projects in Africa have reported reduction in SSI with single dose preoperative antibiotic use compared with post-operative prophylaxis and a reduction in cost and nurse time. Despite evidence to the contrary, many surgeons continue to use post-operative antibiotic prophylaxis.

##### Conclusion

Education to improve incidence of SSI in LMICs through appropriate antibiotic prophylaxis can be successful. Interventions must include local context and address strongly held beliefs. The establishment of local multidisciplinary teams will promote ownership and sustainability of change.

# Presenting Wednesday Evening

Poster No 026

## Impact of the Scottish Reduction in Antimicrobial Prescribing (ScRAP) Programme on primary care prescribing for urinary tract infection (UTI)

Jacqueline Sneddon<sup>1</sup>, Anne Thomson<sup>2</sup>, William Malcolm<sup>3</sup>, Linsey Baxter<sup>4</sup>

<sup>1</sup>Healthcare Improvement Scotland, Glasgow, United Kingdom. <sup>2</sup>NHS Greater Glasgow and Clyde, Glasgow, United Kingdom. <sup>3</sup>Health Protection Scotland, Glasgow, United Kingdom. <sup>4</sup>Information Services Division, Glasgow, United Kingdom

### Abstract

#### Introduction

The ScRAP programme was developed as a national initiative to support improvements in managing patients presenting with symptoms of UTI. The programme comprises educational content plus improvement ideas. It was implemented in one large, mainly urban, NHS board region covering 21% of the Scottish population via Prescribing Support Pharmacists working with individual GP Practices. A key aim was to reduce unnecessary antibiotic use.

#### Method

A facilitated learning session was delivered and all clinical and non-clinical GP Practice staff, were invited to attend. Evidence supporting best practice in managing UTI, local prescribing data and local practice was considered and discussed. The session concluded with action planning to reflect on current practice and identify areas for improvement.

National data held by NHS National Services Scotland was used to evaluate prescribing across all NHS board regions in Scotland focusing on total use of antibiotics and use of trimethoprim and nitrofurantoin which are used solely for UTI.

#### Results

Analysis of national prescribing data comparing the implementation region with the rest of Scotland suggests the intervention has been successful. Comparing data from prior to and for one year after the intervention period reductions for the intervention board versus the rest of Scotland were as follows: all antibiotics 7.29% vs 6.11%; trimethoprim 6.14% vs 3.73%; nitrofurantoin 3.92% vs 0.56%.

#### Conclusion

Quantitative evaluation provides evidence of the impact of ScRAP on prescribing rates. This suggests that improved practice has led to reduction in unnecessary use of antibiotics for acute and recurrent UTI.

# Presenting Tuesday Evening

Poster No 027

## Evaluation of the impact of Scottish Reduction in Antimicrobial Prescribing (ScRAP) Programme on GP Practice management of patients with suspected urinary tract infection (UTI)

Jacqueline Sneddon<sup>1</sup>, Anne Thomson<sup>2</sup>, Lesley Cooper<sup>1</sup>, Ruth Robertson<sup>3</sup>

<sup>1</sup>Healthcare Improvement Scotland, Glasgow, United Kingdom. <sup>2</sup>NHS Greater Glasgow and Clyde, Glasgow, United Kingdom. <sup>3</sup>NHS Education for Scotland, Glasgow, United Kingdom

### Abstract

#### Introduction

The ScRAP programme was developed as a national initiative to improve management of UTI by optimising use of diagnostic tests and prescribing of antibiotics. It comprised educational content plus improvement ideas, audit tools, good practice guides, patient information and decision aids.

#### Method

A facilitated learning session was delivered, usually by a Prescribing Support pharmacist. All GP Practice staff, both clinical and non-clinical, were invited to attend to promote a team approach to change. Local practice was considered using process mapping and each GP practice completed an action plan with changes they intended to implement. Facilitators and participants were encouraged to complete an on-line feedback survey about the learning session. Action plans from 200 GP Practices in one health board region (21% of Scottish population) were analysed using NVivo 12 software to identify key themes.

#### Results

Completed surveys from facilitators and participants showed both groups were positive about the content, approach and length of the session. Action planning was welcomed as a way to embed learning in practice. Some minor changes to content were suggested. Changes in practice included patient education to promote self-management and a reduction in the number of urine specimens sent to microbiology laboratories. A whole team approach to management of patients with suspected UTI increased the success and impact of the changes made.

#### Conclusion

Evaluation of action plans will be helpful for other GP Practice teams seeking to make improvements. Feedback from facilitators and participants will be used to inform update of the programme content.

# Presenting Wednesday Evening

Poster No 028

## Developing a national indicator of intravenous antibiotic use to support timely review of antibiotics in Scottish hospitals

William Malcolm<sup>1</sup>, Linsey Baxter<sup>2</sup>, Megan McNicol<sup>2</sup>, Jacqueline Sneddon<sup>3</sup>

<sup>1</sup>Health Protection Scotland, NHS National Services Scotland, Glasgow, United Kingdom. <sup>2</sup>Information Services Division, NHS National Services Scotland, Glasgow, United Kingdom. <sup>3</sup>Scottish Antimicrobial Prescribing Group, Healthcare Improvement Scotland, Glasgow, United Kingdom

### Abstract

#### Background

To address increasing antibiotic use in acute hospitals, the Scottish Antimicrobial Prescribing Group developed a quality improvement (QI) initiative to support reliable review of patients started on intravenous (IV) antibiotics within 72 hours. This will reduce unnecessary continuation of antibiotics, ensure personalised treatment and appropriate IV to oral switch with associated benefits for patients of reduced risk of device related infections and potential for earlier discharge from hospital.

#### Methods

Using data obtained from the Hospital Medicines Utilisation Database, a national database of secondary care medicines use in Scotland, we examined trends in IV antibiotic use between 2013 and 2017. We then projected the current trend forward to 2021 to inform development of national indicator to optimise IV antibiotic use.

#### Results

In 2017, IV antibiotics accounted for 32.9% of all antibiotic use in Scottish hospitals. Annual IV antibiotic use (defined daily doses per 1000 population per day) increased by 20.5% between 2013 and 2017. We estimated a further projected increase of 12.5% between 2018 and 2021. To measure the impact of our QI initiative SAPG agreed to employ a national indicator with a target that 'use of IV antibiotics in hospitals will be no higher in 2021 than it was in 2018'.

#### Conclusion

This national indicator will evaluate progress with achieving reliable and timely review of IV antibiotic therapy to reduce hospital antibiotic use and contribute to reduction in total antibiotic use in humans which is a key ambition of the UK AMR National Action Plan.

# Presenting Tuesday Evening

Poster No 029

## An audit of antimicrobial usage in perioperative period of adult patients undergoing appendectomy

Huriyah Modan<sup>1</sup>, Stephen Hughes<sup>2</sup>

<sup>1</sup>School of Pharmacy, Reading University, Reading, United Kingdom. <sup>2</sup>Pharmacy, Chelsea & Westminster NHS Trust, London, United Kingdom

### Abstract

#### Introduction

Antimicrobials are prescribed at appropriate dose and in a timely fashion, to reduce post-operative infections in adult patients undergoing appendectomy. It is desirable to establish the shortest and most effective prophylaxis. To assess this, we reviewed a sample of adult patients that have appendectomy procedure completed at the CWFT to assess antimicrobial prescribing in line with local prescribing guidelines.

#### Method

We undertook a retrospective observational study at a central London teaching hospital to investigate antimicrobial prescribing in adult patients undergoing appendectomy between Jan2019 and Jun2019.

#### Results

A total of 173 patients [median age 31year] were analysed; 7 and 167 had undergone an elective and urgent appendectomy respectively. 163/173 [94.2%] received antimicrobials peri-operatively. Compliance with local guidelines was 40.5%; a lack of aminoglycoside in combination with beta-lactam was common (58%). 126/173(72.8%) patients received antimicrobials on discharge, median 7.0 days total antimicrobials. Readmission rates within 30 days of surgery were 6.4% but unrelated to antimicrobial prescribing ( $p=0.8$ ). Enterobacteriaceae was the most commonly identified pathogen ( $n=45$ ), with high co-amoxiclav resistance reported (31%).

#### Conclusions

Combination co-amoxiclav plus aminoglycoside is advised peri-operatively for appendectomies yet adherence is poor. Despite local co-amoxiclav resistance, aminoglycosides are often omitted. The number of patients treated with post-op antimicrobials and the duration of therapy is greater than comparable published studies. Lack of standard definitions for complicated appendectomies makes it difficult to identify patients that do benefit from post-operative antimicrobials thus overprescribing occurs. Agreement on the optimum duration of treatment also is unclear and results in likely excessive prescribing.

# Presenting Wednesday Evening

## Poster No 030

### Incidence of Group B Streptococcus bacteraemia in mum and newborn following antimicrobial prophylaxis- To screen or not to screen?

Stephen Hughes<sup>1</sup>, [Alex Davidson](#)<sup>2</sup>, Luke Moore<sup>3,2,4</sup>, Nabeela Mughal<sup>3,2</sup>

<sup>1</sup>Pharmacy Department, Chelsea & Westminster NHS Trust, London, United Kingdom. <sup>2</sup>Imperial College London, London, United Kingdom. <sup>3</sup>Chelsea & Westminster NHS Trust, London, United Kingdom. <sup>4</sup>North West London Pathology, London, United Kingdom

#### Abstract

##### Introduction

There is no routine screening for antenatal Group B Streptococcus (GBS) carriage in the UK. However invasive GBS in new-borns, whilst rare (0.57/1000 births), is associated with mortality (5%) and long-term disability (9%). Antimicrobials peri-partum can reduce the risk of invasive infection.

##### Method

We undertook a retrospective observational study at a London teaching hospital to investigate the incidence of invasive GBS peri-partum in both mother and child between 1/4/16 and 31/3/19.

##### Results

There were 16,869 live births recorded at Chelsea & Westminster Hospital during the study period. Operative, caesarean and spontaneous delivery accounted for 16.7%, 34.9% and 48.2%; with incidence of neonatal GBS bacteraemia being 0.18%, 0.08% and 0.11%, respectively. 20 (0.12%) neonates had invasive GBS infections, with 7/20 neonates having concurrent maternal GBS bacteraemia. 34(0.22%) ladies had GBS bacteraemia peri-partum; none had GBS isolated prior to delivery. 543 women had a positive GBS clinical isolate prior to labour;69.1% received GBS prophylaxis peri-partum with no invasive GBS transmission. Despite no prophylaxis in 168/543 GBS colonised women, no invasive GBS neonatal cases were identified.

##### Conclusions

Our local data identifies a low prevalence (0.12%) of invasive GBS infection in newborns. Maternal GBS bacteraemia is more frequently observed and associated with concurrent newborn GBS bacteraemia. Antimicrobial prophylaxis adherence peripartum although recommended is suboptimal, even though no invasive GBS transmission was identified. All invasive GBS infections were not known to be colonised pre-delivery. The current recommendations for targeting recent GBS culture do not appear to be a sensitive predictor of invasive peri-partum GBS infection.

# Presenting Tuesday Evening

## Poster No 031

### Impact of serum procalcitonin on antibiotic stewardship in surgical high-dependency unit and intensive care unit settings

Azul Zorzoli<sup>1</sup>, Laura Meney<sup>2</sup>, Benjamin Parcell<sup>2</sup>, John Shone<sup>2</sup>, Aaron Taylor<sup>1</sup>, Sharon Hilton-Christie<sup>2</sup>

<sup>1</sup>University of Dundee, Dundee, United Kingdom. <sup>2</sup>NHS Tayside, Dundee, United Kingdom

#### Abstract

#### Background

Procalcitonin (PCT) testing is used as a biomarker for bacterial infection. We assessed the impact of using a PCT-guided algorithm in Ninewells hospital & Medical School (Dundee, Scotland, UK).

#### Methods

We conducted a retrospective analysis of the use of PCT-testing to evaluate the escalation or de-escalation of antibiotic therapy. For this, we analysed patients admitted to the intensive care unit (ICU) and surgical high dependency unit (SHDU) from November 2018 to April 2019.

#### Results

We analysed a dataset of 235 adult patients, 23% of which were at the hospital's ICU and 77% at the SHDU. Within the ICU, 49% of admitted patients were already on antibacterial therapy, compared to 93% at SHDU. The PCT results influenced the prescription of antibiotics in 33% of total patients (89% and 16% of all ICU and SHDU patients, respectively). Escalation of the antimicrobial therapy was prescribed to 34% of ICU patients after PCT testing, compared to 20% of SHDU patients. Continuation of the previously-established antibacterial scheme was more pronounced in SHDU patients (43% against 23% ICU). In contrast, while discontinuation of the therapy was observed in similar levels on both units (27% SHDU, 28% ICU).

#### Conclusion

PCT has become a useful tool in antimicrobial stewardship. Its use aided the prescription of antibiotics in 33% of the overall total cases in ICU and SHDU. Further work should be carried out to assess its role in other clinical environments.



# Presenting Wednesday Evening

## Poster No 032

### **Theoretical approaches in the development and evaluation of behaviour change interventions that improve clinicians' antimicrobial prescribing: a systematic review**

Hend Talkhan<sup>1</sup>, Derek Stewart<sup>1</sup>, Trudi McIntosh<sup>1</sup>, Palli Valappila Abdul Rouf<sup>2</sup>, Moza Al-Hail<sup>2</sup>, Scott Cunningham<sup>3</sup>, [Hisham Ziglam](#)<sup>2</sup>

<sup>1</sup>Robert Gordon University, Aberdeen, United Kingdom. <sup>2</sup>Hamad Medical Corporation, Doha, Qatar.

<sup>3</sup>Robert Gordon University, Aberdeen, Uganda

#### **Abstract**

Many countries have developed antimicrobial stewardship programmes with strategies to optimise antimicrobial prescribing. There remains a need for behaviour change interventions at clinician level to promote appropriate prescribing. Theories should be used for developing and evaluating interventions to change human behaviour.

#### **Aim / Objectives:**

The aim of this review was to critically appraise, synthesise and present the available evidence for theoretical approaches in the development and evaluation of behaviour change interventions designed to improve clinicians' antimicrobial prescribing.

#### **Design & Methodology:**

The systematic review protocol was developed and registered with the International Prospective Register of Systematic Reviews (CRD42018098586).

Two review authors independently extracted data and assessed study quality. Clinical and methodological heterogeneity limited data synthesis.

#### **Results**

The searches resulted in 4227 relevant articles after duplicates removal. Screening of titles/abstracts led to retrieval and dual assessment of 38 full-text articles. Of those, a total of 10 studies met the inclusion criteria.

The majority of studies were carried out in primary care settings (n = 9) targeting upper respiratory tract infections (n = 8). Use of theory varied considerably across studies included. Theory of Planned Behaviour, Social Cognitive Theory and Operant Learning Theory were the most common theories used to inform the design and choice of interventions.

#### **Conclusion / Discussion**

It is feasible to develop and evaluate theoretically based interventions to improve professional practice. The findings of this systematic review will inform understanding of the theoretical basis of behaviour change interventions which contribute to contain AMR rates and prevent the world entering a "post-antibiotic era".

# Presenting Tuesday Evening

**Poster No 033**

## **Appropriateness of meropenem prescriptions at a large district general hospital, East of England, UK**

Abhishek Sharma<sup>1</sup>, Drishya Dhungana<sup>1</sup>, Tejal Vaghela<sup>1</sup>, Hala Kandil<sup>1,2</sup>

<sup>1</sup>West Hertfordshire Hospitals NHS Trust, Watford, United Kingdom. <sup>2</sup>Faculty of Medicine, Alexandria University, Microbiology department, Alexandria, Egypt

### **Abstract**

#### **Introduction**

Meropenem is a broad spectrum antibiotic used to treat a variety of bacterial infections. There are no clear standards nationally for the use of meropenem. The purpose of this study is to audit the appropriateness of Meropenem prescription at West Hertfordshire NHS trust

#### **METHODOLOGY**

Patients started on meropenem were identified via the hospital pharmacy in the period from 1st January 2019 to 31st March 2019. Patients' clinical notes, drug charts and blood tests were reviewed. Appropriateness of meropenem prescription was judged based on the following: indication, penicillin allergy and its nature, pathogen antibiogram, microbiologists approval, indications for escalation and duration of treatment

#### **RESULTS**

forty-eight patients were identified during the study period. The main indications were hospital-acquired/community-acquired pneumonia and UTI. Penicillin allergy was documented in 31%, the nature of allergy was intolerance in 13% and not known in 20%. Of note, in 42% of these, treatment was not pathogen guided. In 45.5% of non-penicillin allergic patients, escalation to meropenem were neither supported by antibiogram nor by microbiologists. The main driver was raised inflammatory markers (62.5%). Of the 37 patients who completed their treatment during the study period, 21.6% had > 7 days with only 50% recommended by Microbiologists.

#### **CONCLUSION:**

In third of the patients, meropenem use was driven by penicillin allergy, however the nature of allergy did not justify its use in many of these cases. Lack of microbiology approval, failure to de-escalate and long courses of meropenem were additional areas identified to target in our antimicrobial stewardship programme

# Presenting Wednesday Evening

Poster No 034

## Evaluating the Impact of an Antimicrobial Quiz on Staff Perceptions of Stewardship

Faisal A, Abiodun Ogundana, Miriam Kerry, Justin Edwards, Mustafa Awad-el-kariem

Basildon & Thurrock University Hospital, Basildon, United Kingdom

### Abstract

During World Antimicrobial Awareness Week (WAAW) in November 2018 we developed an online interactive quiz accessible for all staff at Basildon and Thurrock University Hospital. All entrants were entered into a prize draw, irrespective of score achieved in the quiz.

A total of 147 staff members entered the quiz from a variety of departments, with the majority of entrants being nurses. Of the 147 entrants, 125 also completed the staff survey following the quiz.

The majority of entrants believed the quiz helped them to become more aware of the problem of antibiotic resistance, prompted them to think about how they use or prescribe antibiotics and learnt new information about antimicrobial use. Furthermore, the majority of entrants were not aware of the trust's performance in regards to antimicrobial prescribing prior to partaking in the quiz

The quiz proved an effective method to highlight the Trust's performance in antimicrobial prescribing, as the majority of the respondents were unaware prior to undertaking the quiz. The use of online technologies to promote antimicrobial stewardship has been shown to be an effective method to use, along with our traditional approaches, to reach a greater proportion of clinical staff.

# Presenting Tuesday Evening

Poster No 035

**ABSTRACT WITHDRAWN**

# Presenting Wednesday Evening

Poster No 036

## Antimicrobial stewardship through Fever Pain score: Successes and challenges in secondary care

Matthew Flynn, Gina Hooper

Western Health and Social Care Trust, Londonderry, United Kingdom

### Abstract

The “Feverpain” score for pharyngitis can reduce antimicrobial (AM) prescribing by 30%. It is adopted by the Western Health and Social Care Trust to steward AM use in secondary care. This project examined the effect of this tool on prescriptions within the emergency department.

Case notes were reviewed in 2 separate periods before and after educating clinicians on the new guidelines. Patients are given 1 point for each of: Fever; Purulent exudate; Attending rapidly within 72h; Inflamed tonsils and No cough / coryza. The total placed patients in one of 3 categories of: AMs not recommended (Score 0-1, 14-18% likely isolation of streptococcus), consider delayed AMs (Score 2-3, 30-35%) and consider AMs (score 4-5, 62-65%).

Numbers totaled 40 (22 male and 18 female) and 38 (24 male and 14 female) in each round, age range 1 to 55. 26 patients were removed as already prescribed AMs by a general practitioner. The ‘no prescription’ strategy rose from 20 to 56% for low fever pain score. 93% Immediate prescribing declined from 93% to 55% in the intermediate group, with one use of delayed prescription. AM prescribing was down 29% overall ( $p < 0.05$ ).

Clinicians became more at ease with the non prescribing strategy in those with lower scores, but delayed prescribing was underutilised. Decreased overall prescribing is possible with education, but FeverPains’ stratified nature and the nuanced theoretical framework may result in anticipated perception of neglect by patients, with resultant inertia in achieving co-ownership. Feverpain scoring in secondary care is potentially efficacious when used correctly.

# Presenting Tuesday Evening

## Final category: Antimicrobial therapy

### Poster No 037

#### Improving treatment compliance and efficacy in patients with infective endocarditis: early experience with dalbavancin at a tertiary cardiac centre

ACHYUT GULERI, Sunita Avinash, RASHMI SHARMA, JOSEPH ZACHARIAS, RASHA SHEREEF

BLACKPOOL TEACHING HOSPITALS NHS FT, BLACKPOOL, United Kingdom

#### Abstract

##### Background:

Infective endocarditis (IE) is associated with high mortality and severe complications. 4-6 weeks of antibiotics can pose logistic challenges for certain high risk patients with specific needs. Dalbavancin (DAL), a novel lipoglycopeptide (long T<sub>1/2</sub>=372h) & broad spectrum gram positive cover, is licensed for skin infections. We describe six patients with IE where use of DAL helped maximise compliance and treatment outcome.

##### Materials/methods:

DAL was administered intravenously (IV) as single (1.5g) or up to three weekly doses in the 6-patients with IE. Euroscore, surgical procedures, echocardiogram findings (pre and post), microbiology, blood findings, outcomes were obtained from databases. DAL was used in special circumstances following multi-disciplinary consideration of available options and patient consent for its off label use.

##### Results:

All patients had a confirmed diagnosis of IE. Age range 42-81y; Aortic valve was affected in all, and simultaneous mitral valve in one patient. Euroscore ranged from 2-6. Past medical history ranged from intravenous drug use, coronary artery disease (CAD), myocardial infarction, myelodysplasia, depression, etc. Organisms included *Staphylococcus aureus*, *Streptococcus oralis* and *Enterococcus faecalis*, diagnosed by 16s rRNA sequencing and/or blood cultures. Echocardiograms (pre and post treatment) and blood tests for monitoring conducted per standards of care. Each patient received antibiotic regimes as clinically indicated and on basis of available microbiological results. 5 of the 6 patients underwent cardiac surgery, while one was conservatively managed.

##### Conclusions:

Long drug half-life and broad spectrum Gram-positive activity of DAL offers potentials for complex scenarios, avoiding hospital admission, facilitating early discharge and cost savings.

# Presenting Wednesday Evening

Poster No 038

## Predicting Cotrimoxazole-Associated Acute Kidney Injury and Hyperkalaemia

Jaikishan Rajput<sup>1</sup>, Luke Moore<sup>1,2,3</sup>, Nabeela Mughal<sup>1,2,3</sup>, Vanessa Marvin<sup>2</sup>, Stephen Hughes<sup>2</sup>

<sup>1</sup>Imperial College London, London, United Kingdom. <sup>2</sup>Chelsea and Westminster NHS Foundation Trust, London, United Kingdom. <sup>3</sup>North West London Pathology, Imperial College Healthcare NHS Trust, London, United Kingdom

### Abstract

#### Background:

Increasing antimicrobial resistance has renewed interest in older, infrequently used antimicrobials. Cotrimoxazole shows future promise; however, acute kidney injury (AKI) and hyperkalaemia are potential complications. Recognising risk factors for cotrimoxazole-associated AKI and hyperkalaemia, and quantifying the impact, are required for safe use against future antimicrobial resistance.

#### Method:

A single-centre retrospective observational study using electronic-healthcare records of patients prescribed cotrimoxazole was conducted. Patient risk factors were identified, and serum creatinine and potassium levels were analysed over the subsequent 21-days from prescription. Univariate and multiple logistic regression analyses were performed. The project was registered locally with the clinical governance team as service evaluation [Ref: CSS033].

#### Results:

Of 214 patients, 42 (20%) developed AKI and 33 (15.4%) developed hyperkalaemia. Low baseline eGFR (<60mls/min/1.73m<sup>2</sup>, OR = 7.78, 95%CI 3.57-16.13, p<0.0001) and pre-existing cardiac disorders (OR = 2.40, 95%CI 1.17-4.82, p=0.011) significantly predicted AKI. Early serum creatinine increases within 2-4 days of therapy predicted future AKI (OR = 3.65, 95%CI 1.73-7.41, p = 0.001). A low baseline eGFR also significantly predicted future hyperkalaemia (<60mls/min/1.73m<sup>2</sup>, OR = 6.80, 95%CI 3.09-15.06, p<0.0001). Low-dose cotrimoxazole (<1920mg/day) was associated with lower AKI and hyperkalaemia risk (p = 0.007 and 0.019, respectively).

#### Conclusions:

Cotrimoxazole-associated AKI and hyperkalaemia is frequent and dose-dependant. Renal function and pre-existing cardiac disorders should be carefully evaluated before prescribing cotrimoxazole. Serum creatinine should be monitored in the first 2-4 days of treatment to identify susceptible patients, and low-doses considered if AKI or hyperkalaemia is suspected.

# Presenting Tuesday Evening

## Poster No 039

### A retrospective review of vancomycin dosing in paediatric patients

Anita Bolina<sup>1</sup>, Stephen Hughes<sup>2</sup>

<sup>1</sup>Imperial College London, London, United Kingdom. <sup>2</sup>Chelsea & Westminster NHS Hospitals, London, United Kingdom

#### Abstract

##### Background:

Vancomycin has antimicrobial activity against most Gram-positive pathogens. Reduced susceptibility of vancomycin to many microbes has necessitated higher target vancomycin trough levels (VTL) of 10-20mg/L. Paediatric dosing algorithms have remained unchanged despite higher VTL targets; increased doses are required. The study outcomes were to assess the impact of new dosing guidelines on VTL, time to target VTL and vancomycin-associated acute kidney injury (vAKI).

##### Methods:

A single-centre review assessed 63 vancomycin treatment episodes between Apr-2016 and Feb-2019. Demographic data, treatment duration, daily vancomycin dosing and VTL were collected. Episodes were grouped as high-dose vancomycin (HDV) ( $\geq 60$ mg/kg/day) and low-dose vancomycin (LDV) ( $< 60$ mg/kg/day). Target VTL was 10-20mg/L. AKI was defined by modified pRIFLE criteria as  $\geq 50\%$  increase in baseline creatinine within 7 days of treatment commencement. The project was registered with the local audit team.

##### Results:

Initial VTL were significantly higher in the HDV group (mean 10.4, SD $\pm$ 4.7mg/L; n=20) than LDV (mean 7.9, SD $\pm$ 4.0mg/L; n=43),  $p=0.0397$ . Whilst time-taken to reach target VTL was improved in the HDV group (53.5 $\pm$ 22.3 hours vs 66.1 $\pm$ 37.1hours), this was statistically insignificant ( $p=0.2675$ ). Paired t-tests revealed no significant changes to baseline creatinine in HDV ( $p=0.1267$ ) and LDV ( $p=0.2006$ ). No differences in vAKI incidence between the two groups were noted ( $p>0.05$ ).

##### Conclusion:

Increasing vancomycin dosages improved initial VTL but was insufficient to improve the length of time to reach target VTL. Reassuringly, there was no increase in vAKI incidence with HDV. The study suggests loading doses in paediatrics may be needed to improve time to target VTL.



# Presenting Wednesday Evening

Poster No 040

## ***In-Vitro* Antibacterial Therapy of *Ficus exasperata*, *Securinega virosa* and *Tamarindus indica* Leaf Extract on Bacterial Isolate from Otitis Media effusion**

Abidemi Ojo<sup>1</sup>, Olugbenga Ojo<sup>2</sup>, SEUN Adebajo<sup>1</sup>, Biola Oladotun<sup>1</sup>, Ganiyat Sodunke<sup>1</sup>, Oluwaseun Ejilude<sup>3</sup>

<sup>1</sup>Federal University of Agriculture, Abeokuta, Nigeria, Abeokuta, Nigeria. <sup>2</sup>Madonna University, Elelle, Port-harcourt, River state, Nigeria. <sup>3</sup>Sacred HEART hOSPITAL, Abeokuta, Nigeria

### **Abstract**

#### **Background:**

Antibiotics resistance which is a global health challenge is no longer a future threat but a present challenge to all facet of clinical settings. Thus, treatment of Otitis media effusion in this regards is a major concern.

#### **Objectives:**

The aim of this study was to determine the efficacy of three medicinal plant extract in the treatment of Otitis media as an alternative therapy

#### **Methods:**

The antibacterial effect of absolute methanol leaf extract of *Ficus exasperate*, *Securinega virosa*, and *Tamarindus indica* on organisms isolated from otitis media effusion was determined using agar well diffusion method. The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) was also determined using the double fold dilution technique. Treatment means were compared with Duncan's New Multiple Range Test at 5% level of significance using Statistical Analysis System

#### **Results:**

Bacteria isolated include *Staphylococcus aureus* 19(39.58%), *Klebsiella pneumonia* 15(31.25%), *Pseudomonas aeruginosa* 10(20.83%), *Proteus mirabilis* 3(6.25%) and *Streptococcus pneumoniae* 1(2.08%). At 1.0mg/ml concentration, At 1.0 mg/ml concentration, *Tamarindus indica* inhibited all the isolates; For *Ficus exasperate*, the MIC was 0.39 mg/ml and MBC was 0.78 mg/ml against *Pseudomonas aeruginosa*; *Securinega virosa* MIC was 0.78mg/ml and MCB 1.56mg/ml against *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. *Tamrindus indica* lowest MIC was 0.39 mg/ml and MBC of 1.56 mg/ml against *streptococcus pneumoniae*. The antimicrobial activity of the three extracts shows significant ( $P<0.05$ ) inhibition for the organisms.

#### **Conclusion:**

This study showed the potentials of the aforementioned extracts as treatment options for cases of OME.

# Presenting Tuesday Evening

## Poster No 041

### Improving Antibiotic Prescribing for UTIs in Renal Impairment

Andrew Nicolson, Oshorenuwa Aiyegbusi, Amy Baggott

NHS Forth Valley, Larbert, United Kingdom

#### Abstract

##### Background:

Urinary Tract Infections (UTIs) are the most common bacterial infections in the elderly. First line antibiotic therapy includes Trimethoprim and Nitrofurantoin, both of which should be used with caution in renal impairment. The project aim was to improve antibiotic prescribing in UTIs for patients with renal impairment.

##### Methods:

Initially an online questionnaire was sent to prescribers working in Forth Valley Hospital to ascertain their knowledge of antibiotic prescribing in renal failure. Quantitative data was obtained reviewing Trimethoprim and Nitrofurantoin prescriptions over 1 month (19/02/19-19/03/19) using HEPMA electronic prescribing system. These results were cross matched with patients renal function collected from SciStore database.

##### Results:

Despite 95% of medical staff having experience of prescribing in renal failure, 35% of those still did not feel confident in prescribing the correct antibiotic dosage with 90% of the opinion that prescribing guidance was necessary. Quantitative data showed that 12.9% (28/217) of patients treated with either trimethoprim or nitrofurantoin had renal impairment. Of these 79% had an Acute Kidney Injury and 71% a degree of Chronic Kidney Injury. 78% of the patients on Trimethoprim had an AKI and 38% of these developed hyperkalaemia. Those prescribed Nitrofurantoin 100% of this group had a concurrent Acute on Chronic Kidney Disease.

##### Conclusion:

79% of patients prescribed Trimethoprim or Nitrofurantoin had a degree of renal impairment leading to potential undertreatment or renal damage in the patient. As a result NHS Forth Valley has now updated prescribing guidelines regarding UTI treatment in patients with renal impairment advising alternative antibiotic therapy.

# Presenting Wednesday Evening

Poster No 042

## Co-Amoxiclav Prescribing in Renal Impairment

Andrew Nicolson, Amy Baggott

NHS Forth Valley, Larbert, United Kingdom

### Abstract

Intro:

Co-amoxiclav use in Forth Valley Royal Hospital is significantly higher than any other acute hospital site in Scotland. The drug is metabolised and excreted renally and its dosage is dependent on renal function.

Methods:

An online questionnaire was sent to clinicians to ascertain their prescribing knowledge in renal impairment. Following this a review of all prescriptions of Co-Amoxiclav over a one month (19/02/19-19/03/19) period was reviewed and cross matched with patients renal function to determine those with a degree of kidney injury. Standard of dosing was compared against the BNF as most clinicians replied that this was their main prescribing resource.

Results:

774 patients were prescribed Co-Amoxiclav; 11.8 % (92) of these with a degree of renal impairment. Only 54% (50) of these patients were prescribed the correct dose of Co-Amoxiclav. 78 patients had an acute kidney injury (AKI) with 58% (45) prescribed the correct dose. In comparison 51% (47) of patients had a Chronic Kidney Injury (CKD) with only 33% (15) prescribed the correct dosage. This number is equally low in patients with an acute on chronic kidney injury; 35.8 % (33) patients with 30% (9) on the correct dose.

Conclusion:

46% of patients with a degree of kidney injury are being prescribed the wrong dosage of Co-Amoxiclav which may potentially result in patient harm or under treatment of their condition. Further education is required within the trust to ensure prescribers use correct sources including the Renal Handbook and consider alternative antibiotics in patients with renal impairment.

# Presenting Tuesday Evening

## Poster No 043

### Genetic diversity of urogenital *Chlamydia trachomatis* before and after mass drug administration for trachoma

Ioannis Baltas<sup>1</sup>, Harry Pickering<sup>1</sup>, Mathew Beale<sup>2</sup>, Martin Holland<sup>1</sup>, Aalbartus Versteeg<sup>1</sup>, David Mabey<sup>1</sup>, Chrissy h Roberts<sup>1</sup>, Henry Kako<sup>3</sup>, Anthony Solomon<sup>1</sup>, Nick Thompson<sup>1,2</sup>, Michael Marks<sup>1</sup>, Robert Butcher<sup>1</sup>

<sup>1</sup>Clinical Research Department, London School of Hygiene & Tropical Medicine, London, United Kingdom. <sup>2</sup>Wellcome Trust Sanger Institute, Hinxton, United Kingdom. <sup>3</sup>Solomon Islands Ministry of Health, Honiara, Solomon Islands

#### Abstract

##### Background

The WHO recommends treatment of trachoma with community-wide mass drug administration (MDA) with a single dose of azithromycin as part of the SAFE strategy (surgery, antibiotics, facial cleanliness and environmental improvement). In the Solomon Islands, this programme had demonstrable collateral benefit by reducing the prevalence of urogenital *Chlamydia trachomatis* (*Ct*) infections. We evaluated the impact of this treatment on population genetics of urogenital *Ct*.

##### Methods

Two vaginal swabs were collected from consecutive women attending antenatal clinics during cross-sectional surveys before and after MDA. For every swab positive for *Ct* infection, DNA was extracted from the second swab, enriched and sequenced using paired-end sequencing. Whole-genome sequences were aligned against selected references. Diversity was assessed using genome-wide pairwise diversity and a high-resolution multi-locus sequence typing (hr-MLST-6) scheme. ARIBA software was used to test for evidence of antimicrobial resistance to macrolides.

##### Results

Whole-genome sequence data was obtained from 23/49 (47%) pre-MDA and 32/41 (78%) post-MDA *Ct*-positive samples. Most strains were serotype E and F, and tissue tropism genes were consistent with their urogenital nature. Genetic diversity of *Ct* was lower by both pairwise and hr-MLST-6 diversity metrics in the post-MDA sample than the pre-MDA sample. There was no evidence of mutations known to confer resistance to macrolides in any of the samples collected.

##### Conclusions

Reduced diversity after MDA may represent selection pressure from mass antibiotic delivery. The absence of antimicrobial resistance is encouraging. The collateral impact (both positive and negative) of large-scale preventative chemotherapy programmes should be considered when deciding whether should be implemented.

# Presenting Wednesday Evening

## Poster No 044

### **Vancomycin continuous infusion - review of use on our adult intensive care unit and establishing therapeutic loading dose.**

Sheiba Chamurally, Chris Remington, Jamie Cheong

Royal Brompton & Harefield NHS Foundation Trust, London, United Kingdom

#### **Abstract**

##### Background

Reviewing compliance to our Trust guidelines on AICU led us to investigate whether the loading dose prior to continuous infusion was sufficient to achieve therapeutic levels at first measurement.

##### Methods

Retrospective data was pulled (January 2011 - June 2017) from a data interrogation system (SAS Enterprise Guide) which linked patients receiving continuous infusion vancomycin at a concentration of 500mg/50ml. This was presented into Excel spreadsheets, additional headings added for data interpretation, then manipulated into pivot tables to determine objectives.

##### Results

In 82 courses of vancomycin continuous infusions in 70 patients, 53 received correct loading doses. 31 courses had continuous infusion started within 2 hours of loading dose finishing. 13 courses started at the correct rate. 12/13 courses had vancomycin levels taken. Only one course reached therapeutic range at the first level taken (19.5mg/kg). Of the remaining 11 courses which were out of range, 7 were titrated appropriately – 6 became therapeutic, one remained out of range and was stopped. 3 were not titrated correctly and remained out of range or not titrated at all.

##### Conclusion

16% (13/82) of all continuous vancomycin infusions on AICU complied with guidelines. Only one patient who received the highest weight-based loading dose of 19.5mg/kg reached therapeutic range at the first level monitored, suggesting that doses of  $\geq 20$ mg/kg at loading are required.

# Presenting Tuesday Evening

## Poster No 045

### **Combination of Bedaquiline plus Delaminid within a treatment regimen for Pre-XDR TB; experience of a tolerable regimen and acceptable safety profile for the first time in Scotland**

Katherine Cobb, Aline Wilson, Nikolas Rae, Neil Stevenson

NHS Tayside, Dundee, United Kingdom

#### **Abstract**

##### **Introduction:**

A 29 year old female of Pakistani origin was diagnosed with MDR-TB affecting cervical nodes, with pulmonary and laryngeal disease demonstrated on CT. Genotypic (and subsequent phenotypic) testing demonstrated pre-XDR resistance pattern with Isoniazid, Rifampicin, Ethambutol & Fluroquinolone resistance.

##### **Methods:**

Following commencement of induction regimen with Amikacin, Cycloserine, Prothionamide, Pyrazinamide, Linezolid and Clofazimine, borderline ototoxicity developed after 6 months, necessitating a switch from Amikacin to Bedaquiline. After around 10 months, Linezolid and Cycloserine were discontinued sequentially due to progressively debilitating peripheral neuropathy, PAS was subsequently added to the regimen which was poorly tolerated. PAS was substituted for Delaminid (used with Bedaquiline, Clofazimine and Pyrazinamide) despite concerns regarding potential cumulative QTc prolongation effects. Patient was counselled regarding risk of cardiac arrhythmias; fortnightly ECG monitoring was agreed to for three months, then monthly thereafter. Manual calculations of QTc were performed using Fredericia formula.

##### **Results:**

QTc rose maximally to 491 ms (89ms greater than baseline). Clinical and radiological monitoring demonstrated favourable improvement in condition. No further adverse events or toxicities were reported. The patient continues to tolerate the regimen well with no components of the regimen requiring discontinuation.

##### **Dicussion:**

Bedaquiline and Delamanid are rarely used together in combination due to risk of QTc prolongation; in this clinical case they were used with no concerns being raised regarding safety or tolerability. Our experience corresponds with the international data produced by Ferlazzo et al. Whilst further large volume safety data is awaited, compassionate use of alternative drug regimens within strict monitoring guidelines should be considered.

# Presenting Wednesday Evening

## Poster No 046

### Experience of adopting a standardised nomogram for gentamicin monitoring- an audit.

Charlotte Brookfield, Rebecca Clark, Suganya Reddy

Lancashire Teaching Hospitals NHS Foundation Trust, Preston, United Kingdom

#### Abstract

##### Background:

Gentamicin, an aminoglycoside antibiotic, requires therapeutic drug monitoring to decrease the risk of nephrotoxicity and ototoxicity. We audited compliance with our dosing and monitoring guidelines since adoption of the Barnes-Jewish Nomogram for once daily 5mg/kg dosing in September 2018.

##### Methods:

We retrospectively reviewed 62 patients who received 171 gentamicin doses with 173 accompanying levels taken between 1/11/18 and 31/1/19.

##### Results:

The audit demonstrated overall poor adherence to guidelines. Only 50% of patients received the correctly calculated dose. 40% of gentamicin levels were taken between 6-14 hours resulting in a large number of uninterpretable levels requiring additional actions e.g. repeat levels. 50% of follow up doses were given in the correct time frame. For patients with normal renal function twice weekly monitoring is recommended. In all cases (n=35) where this applied levels were monitored more frequently than indicated. U&Es were regularly monitored for all patients and we did not identify any acute kidney injury.

##### Conclusion:

The Barnes-Jewish nomogram was adopted to provide a standardised evidence based monitoring system for gentamicin. However our audit demonstrates the guidance was not well executed clinically. There appeared to be a lack of appreciation and responsibility for monitoring and interpretation of levels. This resulted in erratic sampling, unnecessary levels, and delayed doses. As a result of this audit we intend to adopt a simpler trough level system based on the gentamicin SPC. Our audit demonstrates the need to evaluate service improvement implementations since theoretical benefits do not always translate in to clinical practice

# Presenting Tuesday Evening

## Poster No 047

### Dalbavancin: A “silver bullet” against gram positive infections in PWID

Stuart Taylor<sup>1</sup>, Harriet Sharp<sup>2</sup>, Samantha Lippett<sup>2</sup> Bethany Davies<sup>2</sup>

<sup>1</sup>Royal Free Hospital, London, United Kingdom. <sup>2</sup>BSUH, Brighton, United Kingdom

#### Abstract

##### Introduction:

Dalbavancin is a novel lipoglycopeptide antibiotic which provides gram positive cover including MRSA and enterococci for up to six weeks with two doses. We report the use of Dalbavancin at the Royal Sussex County Hospital in Brighton from 2018-2019.

##### Methods:

Patients were given dalbavancin after approval by a consultant microbiologist on a case by case basis.

##### Results:

20 patients in total received dalbavancin during this time period. 11 out of 20 patients were male with a mean sample age of 54. 14 patients were ex or current IVDUs. The most frequent dose of dalbavancin given was 1.5g single dose in 11 out of 20 patients.

14 patients had a confirmed bacteraemia. There were 8 cases of MSSA, 1 case of MRSA, 1 CNS, 2 IGAS, 1 Group C Streptococcus and 2 Streptococcus dysgalactiae bacteraemias (one patient had 2 organisms identified in blood cultures). The commonest source of infection was skin and soft tissue, identified in 11 out of 20 patients.

Patients had received a median of 2 (range 1-5) different antibiotics prior to use of dalbavancin with a median course of 14 (range 1 – 27) days Abx prior to Dalbavancin. Patients were admitted for a mean of 15 days with a mean of 12 bed days saved per patient. There was one readmission during this time period which was due to a gram-negative sepsis.

##### Discussion:

Given the challenges of managing severe infections in PWID, dalbavancin can be a “silver bullet” to facilitate effective treatment of important gram-positive pathogens.



# Presenting Wednesday Evening

Poster No 048

## ***Staphylococcus aureus* bacteraemia management in a busy London DGH; is early switch to ceftriaxone safe?**

Emma McGuire, Kate Woods, Aileen Boyd

Homerton University Hospital NHS Foundation Trust, London, United Kingdom

### **Abstract**

#### **Background:**

Standard of care for management of *Staphylococcus aureus* bacteraemia (SAB) is 2-4 weeks intravenous (IV) flucloxacillin or glycopeptide. Ceftriaxone (CRO) is used to facilitate management of SAB under out-patient antimicrobial therapy (OPAT) services once patients are medically stable, however published data on this approach are limited.

#### **Methods:**

Retrospective review of SAB cases at Homerton Hospital: 1<sup>st</sup> August 2015 to 31<sup>st</sup> July 2018. Cases were identified from the microbiology database and clinical data retrospectively collected from electronic patient records.

#### **Results:**

83 cases of SAB were included. Median age was 56 years (IQR 45-74); 53 (63.9%) were male. 70 (84.3%) had complicated SAB, 4 (4.8%) had MRSA bacteraemia and 11/80 (13.8%) were PVL positive. After excluding patients who died or were transferred whilst on IV therapy; 8/11 (72.7%) uncomplicated SAB patients and 29/55 (52.7%) complicated SAB patients received the standard duration of IV anti-staphylococcal therapy. Median length of stay (LOS) was 32 days (IQR 16-52.5). 30-day mortality was 9.6%; in hospital mortality was 14.5%.

Eight (8/83, 9.6%) patients switched to CRO prior to completion of standard IV flucloxacillin therapy to facilitate OPAT. Median length of IV flucloxacillin in this group was 12 days (IQR 7-16). Ceftriaxone MIC was performed on 1/8 isolates (3mg/L). 7/8 had complicated SAB. Median LOS was 13 days (IQR 9-17). There were no deaths or relapsed infections. 1 patient developed *C. difficile* infection on CRO.

#### **Conclusion:**

In this cohort ceftriaxone was a safe and effective follow-on therapy from flucloxacillin for management of SAB and allowed reduced LOS.

# Presenting Tuesday Evening

Poster No 049

## **Analysis of outpatient and home parenteral intravenous antibiotic therapy (OHPAT) cases at the Newcastle upon Tyne Hospitals NHS Foundation Trust from April 2017 to June 2019**

Joshua Pinedo, Uli Schwab

Royal Victoria Infirmary, The Newcastle upon Tyne Hospitals NHS Foundation Trust, United Kingdom

### **Abstract**

#### **Introduction and Methods**

Newcastle's OHPAT service has been operating since 2011, providing intravenous antimicrobials on outpatient basis for deep seated infections (DSI) and skin and soft tissue infections (SSTI); either provided at the OHPAT service in hospital (H-OPAT), delivered to the patient's home (C-OPAT) or self-administered by an instructed patient (S-OPAT). The service aims to reduce admissions and inpatient bed days. Data from a prospective database was analysed to determine bed days saved, admissions avoided, location and success rate of treatment and adverse outcomes.

#### **Results**

292 patients (174 male, 118 female) median age 54 (range 17– 97) April 2017-June 2019. 148 patients with SSTI and 143 DSI. 140 patients previously treated as inpatients. 141 admissions avoided; 3540 bed days saved; 267 patients treated with H-OPAT; 21 C-OPAT; 4 S-OPAT. High cure rate of 100% in SSTI and 97% in DSI (3 re-admissions, 1 self-discharge). Low complication rate with no death, MSSA/other bacteraemia or CDT-associated diarrhoea. Low complication rate of 0.7%: rash in 1 patient (on ceftriaxone) and line blockage in 1 patient.

#### **Conclusion**

The aim of the OHPAT service is equality of effectiveness and safety compared to inpatient care. This has been achieved in the ongoing low rate of complications and adverse outcomes. The service treated a wide range of DSI which contribute a larger proportion of bed days for much fewer cases than SSTI. Significant numbers of hospital stays were avoided or shortened. OHPAT has been able provide complex regimes with home delivered and self-administered dosing.

# Presenting Wednesday Evening

Poster No 050

## Antibiotics & adjuvant corticosteroids in management of pneumococcal meningitis: a retrospective case-notes audit

Andrew Barr, Uli Schwab

Newcastle Upon Tyne Hospitals, Newcastle Upon Tyne, United Kingdom

### Abstract

#### Background

Pneumococcus remains the most common cause of bacterial meningitis with high morbidity and mortality. Adjuvant corticosteroids with early antibiotics have been shown to reduce the neurological morbidity and mortality respectively and this is reflected in British Infection Society (BIS) guidance.

#### Aim

To assess how closely BIS guidelines were followed regarding antibiotic and adjuvant corticosteroid administration in management of pneumococcal meningitis.

#### Methods

Newcastle Upon Tyne Hospital case-notes of pneumococcal meningitis from a 7-year-period(2012-2019) were audited. Patients were identified using microbiological records and case-notes. Data was collected on intervals from initial-assessment to commencing antibiotics and corticosteroids.

#### Results

Eighteen cases were identified of whom three(17%) presented with the classic triad (fever, meningism, reduced GCS). All patients received appropriate antibiotics: 3/18(17%) within first hour of assessment. The median time to antibiotics was 5h 8mins (range:21-7129min). Eight patients(44%) received antibiotics >6h after assessment. Twelve patients(67%) received corticosteroids; only six(33%) at the recommended dose and duration. Mean time from antibiotics to corticosteroids was 6h1min. Five deaths occurred in the cohort with three attributable to pneumococcal sepsis (all had late presentations). 6/18 had significant neurological sequelae, irrespective of whether they received corticosteroids.

#### Discussion

The significant morbidity and mortality of pneumococcal meningitis demands a high index of suspicion. BIS guideline targets are repeatedly not met; long delays exist between assessment and antibiotic and corticosteroid administration. Integrated electronic prescribing and clinical Early Warning Systems have potential to ameliorate this with meningitis-tailored order sets to prompt consideration of meningitis and guide correct prescribing.

# Presenting Tuesday Evening

## Poster No 051

### Teicoplanin therapeutic drug monitoring (TDM) – excessive or essential?

Aileen Boyd<sup>1</sup>, Carmen Cabeza Brasa<sup>2</sup>

<sup>1</sup>Homerton University Hospital, London, United Kingdom. <sup>2</sup>Barts Health Trust, London, United Kingdom

#### Abstract

##### Background:

Teicoplanin is a glycopeptide antibiotic which is frequently used in preference to vancomycin because it does not require such regular TDM as the association between concentration and toxicity has not been fully established. TDM is however, recommended to help optimise therapy in some patients. In our hospital there was an observation of frequent sub-therapeutic levels which prompted an audit of TDM results.

##### Methods:

Retrospective review of TDM results August 2015- March 2017 at Homerton Hospital with analysis of dose, renal function, patients' weight and type of infection.

##### Results:

We analysed 54 samples from 33 patients. The most common dose was 600 mg OD which equated to a mean dose of 8.68 mg/Kg with under-dosing in all weight groups but with lowest levels in the group between 110-120 Kg. A 24hr dosing regimen was the most common and other dosing regimens (48hrly or 72hrly) more frequently associated with sub-therapeutic levels.

Overall, the mean level was 27.8 +/- 11.9 mg/L but 41% (n=22) of levels were sub-therapeutic for the type of infection treated including 4 patients with bacteraemia, 7 patients with bone and joint infections (n=10 samples) and 3 patients (n=6 samples) with prosthetic joint infections. There was only one patient with teicoplanin levels >60 mg/L who was on treatment for a streptococcal endocarditis. She did not report any side effects.

##### Conclusion:

The current dosing regimen recommended by the BNF frequently results in sub-therapeutic levels. TDM is essential in managing complex infections to ensure therapeutic levels are achieved.

# Presenting Wednesday Evening

Poster No 052

## An Audit of Therapeutic Drug Monitoring of Aminoglycosides at an Urban Teaching Hospital

Samitha Fernando, Vishal Amin, Anna Goodman, Simon Sparkes

St Thomas' Hospital, London, United Kingdom

### Abstract

#### Background:

Aminoglycosides are important agents used in the management of severe sepsis. Though they have potent antibacterial effects, therapeutic drug monitoring is also crucial to prevent nephrotoxicity and ototoxicity.

#### Aim:

To assess the therapeutic drug monitoring of Amikacin and Gentamicin in critical care over a 1-month period at a large urban teaching hospital.

#### Method:

An audit tool from the electronic critical care patient records was used to produce a database of all patients who received Amikacin and Gentamicin between October and November 2018. Pathology reports and electronic drug charts were reviewed to assess the timing of the aminoglycoside levels taken and repeat dose administration once drug levels were reported. We also assessed whether Amikacin and Gentamicin doses were adjusted for patients with high levels.

#### Results:

64 patients received Gentamicin and 7 patients received Amikacin over the audit period. 207 aminoglycoside levels were assessed. The mean delay for levels to be taken was 0.04 hours, with no delays for 136 of the drug levels taken. 34% of patients received repeat doses within 1 hour of the aminoglycoside levels being resulted. 19 patients had high drug levels, 8 of whom had subsequent doses adjusted.

#### Discussion:

Whilst aminoglycoside levels were taken in a timely manner, there was some scope for improvement in the timing of repeat dose administration and in redosing of antibiotics in patients with high levels. Following education of clinical staff and evaluation of trust guidelines we will conduct a re-audit.

# Presenting Tuesday Evening

## Poster No 053

### The spectrum of bacterial pathogens in patients with chronic obstructive pulmonary disease

Nataliia Popenko, Zhanna Sobkova

Ukrainian Military Medical Academy, Kyiv, Ukraine, Kyiv, Ukraine

#### Abstract

##### Background:

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of death in the world. The question of antibiotic therapy role during the COPD exacerbation remained for a long time not absolutely certain.

##### Objectives:

To examine the role of bacterial pathogens in COPD exacerbation development, to analyze diagnostic and therapeutic measures in retired military patients for the purpose of their optimization.

##### Methods:

72 men aged 43 to 88 years old with an infectious exacerbation of chronic obstructive pulmonary disease (COPD) were examined. To identify the etiological structure of the infectious exacerbation of COPD, data from a bacteriological study of sputum was used, which included the quantitative detection of the pathogen and its sensitivity to antibacterial drugs.

##### Results:

The causes of exacerbations of COPD in the subjects were acute respiratory viral infections (34.7%), overcooling (15.3%), physical overload and work in unfavorable conditions (5.5%), decompensation of concomitant pathology (5.5%). In 40% of cases, the cause of the exacerbation was unknown.

Types 1 (44.5%) and 2 (43%) exacerbations were most often observed in the examined patients according to Anthonisen, and type 3 - only in 12.5% of cases.

It was found that representatives of the family of Streptococcus (*S. pneumoniae*, *S. mitis*, *S. viridans*, *S. epidermidis*) caused infectious exacerbations of COPD in 53.3% of the patients, Staphylococcus - in 16.6%, *Ps. auruginosa* - in 6.6%.

Most pathogens were susceptible to  $\beta$ -lactam antibiotics, namely amoxicillin / clavulanate ( $95.8 \pm 8.5$ ) % and ceftriaxone ( $95.8 \pm 8.5$ ) %.

# Presenting Wednesday Evening

## Final category: Antimicrobials and antimicrobial resistance

Poster No 054

### NANOPLEXES MOLECULAR PATTERNS FOR VANCOMYCIN EFFICACY AGAINST METHICILLIN-RESISTANCE STAPHYLOCOCCUS AUREUS

DANIEL HASSAN<sup>1</sup>, Calvin A. Omolo<sup>1,2</sup>, Chunderika Mocktar<sup>1</sup>, Thirumala Govender<sup>1</sup>

<sup>1</sup>University of KwaZulu-Natal, Westville Campus, Durban, South Africa. <sup>2</sup>United States International University-Africa, Nairobi, Kenya

#### Abstract

The difficulty in treating life-threatening infections caused by MRSA is a global problem and conventional antibiotics are failing to provide effective therapy due to resistance development thus the need for innovative strategies to combat the problem... Nanoplexes are drug nanoparticles which form complex with oppositely charged polyelectrolyte and have shown to be effective drug delivery of antibiotics. The aim of this study is to explore the *in vitro* molecular pattern of vancomycin (VCM) and dextran (VCM-DXT) nanoplexes in fluorescence emission enhancement, maximized membrane disruption, decrease protein concentration and DNA concentration in MRSA for a mechanistic understanding of VCM-DXT elimination of the bacteria. The nanoplexes were characterized for their *in vitro* electrical conductivity, membrane disruption, protein concentration determination and DNA quantification. The *in vitro* electrical conductivity of the VCM-DXT-nanoplexes demonstrated an increase in the electrical conductivity from  $0.321 \pm 0.01$  to  $0.39 \pm 0.11$  mS cm<sup>-1</sup>. These indicate an increase in membrane permeability of bacteria by destroying the cell membrane leading to the leakage of cellular substance in combating infectious diseases. Furthermore, the VCM-DXT-nanoplexes revealed a maximum MRSA membrane destruction and high emission enhancement intensity of the biofilm obtained from high-resolution transmission microscopy and fluorescence microscopy respectively. The VCM-DXT-nanoplexes demonstrated 3-fold and 1.98-fold decreased in protein concentration and DNA quantification respectively compared to the control. The novel VCM-DXT nanoplexes could be a promising delivery system of VCM by effectively eliminating MRSA infections and prevention of emergence of resistance. This could go a long way in preserving the potency of VCM and extending the time-lapse before the development of resistance.

# Presenting Tuesday Evening

Poster No 055

## Efficacy of a novel flavone modulating quorum sensing phenotype against Urinary tract Pathogens

Sucharitha Kannappan Mohanvel<sup>1,2</sup>, Satish Kumar Rajasekharan<sup>3,4</sup>, Florida Tilton<sup>5</sup> and Christy Rosaline<sup>6</sup>

<sup>1</sup>Department of Biotechnology, D.G. Vaishnav College, Chennai, Tamil Nadu, India. <sup>2</sup>CAS in Botany, University of Madras, Maraimalai campus, Guindy, Chennai, Tamil Nadu, India. <sup>3</sup>Centre for Research and Development, PRIST University, Thanjavur, Tamil Nadu, India. <sup>4</sup>School of Chemical Engineering, Yeungnam University, Gyeongsan, Korea, Democratic People's Republic of. <sup>5</sup>Biozone Research Technologies Pvt Ltd, Chennai, India. <sup>6</sup>National Institute for Research in Tuberculosis, Chennai, India

### Abstract

#### Background:

*Urinary tract infection (UTI) is the communal hospital infections triggered by Gram negative bacterium owing to their ability to colonize UT mucosa. The Quorum sensing (QS) molecules will adapt upon the environment that alter the expression and secretion of biofilm matrix compounds.*

#### Objectives:

*To evaluate the biological property of a purified compound against selected UT pathogens.*

#### Methods:

*Aerva lanata plant extract was screened for its antibiofilm property using Chromobacterium violaceum as the test strain. Further purification done using Chromatographic technique and purified compound examined for antivirulence property. Purified compound impact on the QS molecule, biofilm formation were explored by analysing bacterial regulatory functions. Comparative analysis done using RT-PCR for detecting QS genes in the UT pathogens and bacterial compounds analysed using in silico studies as well.*

#### Results:

*A. lanata methanolic extract recognised 11 compounds in GC-MS analysis and their respective host receptors predicted by in silico analysis. Column chromatography revealed purified compound of A. lanata methanolic extract. Purified compound restricted AHL regulated physiological functions such as biofilm formation, pellicle inhibition, flagellar motility and exopolysaccharides (EPS) production. Confocal microscopy visualization of biofilm showed concentration influenced reduction in bacterial biofilm formation in response to purified compound. In silico analysis of purified compound revealed putative compounds which inhibit the bacterial QS AHL system. Down regulation of QS related virulence genes viz., las1, lasR, lasB, lasA by RT-PCR analysis.*

#### Conclusion:

*This study suggests strongly that flavone from A. lanata extract should be further investigated for its significant biological potential to treat bacterial UTI.*



# Presenting Wednesday Evening

Poster No 056

## Chlorine tolerance profiling of bacteria isolated from wastewater effluent

MOJISOLA OWOSENI<sup>1,2</sup>, Anthony Okoh<sup>2</sup>

<sup>1</sup>Department of Microbiology, Federal University Lafia, Lafia, Nigeria. <sup>2</sup>Department of Biochemistry and Microbiology, University of Fort Hare, South Africa, Alice, South Africa

**Abstract**

**ABSTRACT WITHDRAWN**

# Presenting Tuesday Evening

Poster No 057

## Multidrug-Resistant *Vibrio* species recovered from some Freshwater Resources in Southwest Nigeria: a public health concern

Ibukun M. Adesiyan<sup>1,2,3</sup>, Mary A. Bisi-Johnson<sup>4</sup>, Aderemi A, Ogunfowokan<sup>5</sup>, Anthony I Okoh<sup>3</sup>

<sup>1</sup>Institute of Ecology and Environmental Studies, Ile Ife, Nigeria. <sup>2</sup>Achievers University, Owo, Ondo state, Nigeria. <sup>3</sup>South Africa Medical Research Council, Water Monitoring Centre, University of Fort Hare, South Africa, Alice, South Africa. <sup>4</sup>Department of Microbiology, Obafemi Awolowo University, Ile Ife, Nigeria. <sup>5</sup>Department of Chemistry, Obafemi Awolowo University, Ile Ife, Nigeria

### Abstract

Globally, pathogens that cause infectious water-related diseases such as diarrhea and cholera are beginning to manifest with unusual antibiotic resistance characteristics and virulence, posing a huge threat to public health. *Vibrio* species are a leading cause of water-and food-borne outbreaks and is widely distributed in the water environments making it a significant threat to human health worldwide. A total of 315 *Vibrio* isolates recovered from different freshwater resources in southwest Nigeria were confirmed by simplex PCR using *toxR* gene. All confirmed isolates were tested for In vitro susceptibility to 18 antibiotics using agar disc-diffusion assay and the phenotypic tetracycline-resistant isolates were further profiled for their genotypic antimicrobial resistance determinants by PCR assay. The isolates were variously susceptible to the antibiotics tested as follows: norfloxacin 308 (98%), ciprofloxacin 293 (93%), meropenem 287 (91%), cefotaxime 279 (88%), amikacin 238 (75 %). Conversely, resistance to erythromycin 300 (95%), sulphamethoxazole 297 (94%), rifampicin 289 (92%), doxycycline 260 (82%), tetracycline 237 (75%) were equally observed. Tetracycline resistance isolates were assessed for resistance determinant and the following prevalence were obtained; tetA (28), tetE (20), and tet39 (3). The MAR index across the sampling locations of 0.8 to 0.94 exceeds the threshold value of 0.2, suggesting excessive antimicrobial usage at the sample source. Our findings reveal high incidence of *Vibrio* species in the selected freshwater resources and also signify high resistance towards some conventionally used antibiotics. Consequently, this portends that the waters are unfit for domestic, industrial and recreational purposes and a reservoir of antibiotic resistance determinants in the environment.

# Presenting Wednesday Evening

Poster No 058

## **Towards a harmonised approach to Carbapenemase-producing Enterobacteriaceae (CPE) screening and patient management in North East and Cumbria hospitals**

Nicola Love<sup>1</sup>, Joanne Darke<sup>2</sup>, Simon Howard<sup>2</sup>, Paul Davison<sup>2</sup>, Miles Denton<sup>3</sup>, Julie Samuel<sup>4</sup>, Petra Manley<sup>1</sup>

<sup>1</sup>1. Field Service North East, Public Health England, Newcastle, United Kingdom. <sup>2</sup>2. Public Health England North East Centre, Public Health England, Newcastle, United Kingdom. <sup>3</sup>3. Field Service Yorkshire and Humber,, Leeds, United Kingdom. <sup>4</sup>4. Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, United Kingdom

### **Abstract**

In mid-2018, a Carbapenemase-producing Enterobacteriaceae (CPE) cluster was investigated in the North East of England, in which transmission had occurred across several hospital trusts. We undertook a survey of current CPE detection and management practices in North East and Cumbria (NEC) trusts to inform a harmonised approach that could be adopted across the region.

A semi-structured survey was carried out with one consultant microbiologist per trust by telephone interview (n=6) or electronic questionnaire (n=3) to determine CPE screening procedures, laboratory techniques and patient management practices.

Screening policies were in place in all trusts, including screening protocols for patients previously admitted outside of the UK or those known to be CPE positive, in accordance with PHE guidelines. Policies for screening patients who had been admitted to other UK hospitals varied across trusts, as did laboratory methods used. Over 80% of trusts communicated CPE status to patients and contacts by information leaflet. However, there was no uniform way of communicating CPE status to social care settings, GPs and other hospital trusts in the event of discharge or inter-hospital transfer.

The results of the survey suggest improvements could be made to the way information on patient CPE status is shared to ensure that the risk of transmission is reduced. This includes improved communication with residential settings, primary care and other hospital trusts in the event of a discharge or inter-hospital transfer. In addition, this work will inform further discussions across NEC towards developing a single regional Infection Prevention and control strategy for CPE.

# Presenting Tuesday Evening

Poster No 059

## Occurrence and Evaluation of Antimicrobial Susceptibility of *Staphylococcus aureus* Isolated from Chicken Eggs, Eastern Ethiopia

Jelalu Kemal<sup>1</sup>, Wakene Beji<sup>2</sup>, Gebregeorgis Tesfamariam<sup>2</sup>

<sup>1</sup>Haramaya University, Dire Dawa, Ethiopia. <sup>2</sup>Jigjiga University, Jigjiga, Ethiopia

**Abstract**

**ABSTRACT WITHDRAWN**

# Presenting Wednesday Evening

## Poster No 060

### Pharmacodynamic evaluation of intermittent versus prolonged infusion dosing regimens of piperacillin/tazobactam in a hollow-fiber infection model against two susceptible *Klebsiella pneumoniae* clinical isolates

Chandra Datta Sumi<sup>1</sup>, Fekade B. Sime<sup>1</sup>, Aaron J. Heffernan<sup>1,2</sup>, Saiyuri naicker<sup>1</sup>, Kamrul Islam<sup>1</sup>, Kyra Cottrell<sup>3</sup>, Patrick N.A. Harris<sup>3</sup>, Jason A. Roberts<sup>1,3,4,5</sup>

<sup>1</sup>Centre for Translational Anti-Infective Pharmacodynamics, School of Pharmacy, The University of Queensland, Brisbane, Australia. <sup>2</sup>School of Medicine, Griffith University, Gold Coast, Australia. <sup>3</sup>The University of Queensland Centre for Clinical Research (UQCCR), Faculty of Medicine, The University of Queensland, Brisbane, Australia. <sup>4</sup>Department of Intensive Care Medicine, Royal Brisbane and Women's Hospital, Brisbane, Australia. <sup>5</sup>Pharmacy Department, Royal Brisbane and Women's Hospital, Brisbane, Australia

#### Abstract

**Background** - This study aims to compare the bacterial killing and suppression of resistance emergence of intermittent and prolonged infusions of piperacillin/tazobactam (PTZ) against clinical *K. pneumoniae* isolates.

**Methods** - Two clinical isolates, CTX-M-14 producing #69 (MIC 1 mg/L), and DHA-1, SHV-106 producing #68 (MIC 8 mg/L), were studied in a dynamic hollow-fiber infection model over 7 days (initial inoculum 10<sup>7</sup> CFU/mL). Three piperacillin doses (4/0.5g over 0.5h, and 4h infusion 8 hourly; 12/1.5g continuous infusion 24h) against #69, and six dosages of piperacillin (4/0.5g over 0.5h, and 4h infusion 8 hourly, and 12/1.5g continuous infusion 24h; 4/0.5g over 0.5h, and 3h infusion 6 hourly, and 16/2g continuous infusion 24h) against #68 were tested. The total and less-susceptible bacterial populations were determined.

**Results** - For all PTZ dosing regimens against #69, there were ~4 logs of bacterial killing over 8h. The amplification of less-susceptible subpopulation were associated with intermittent infusion (T<sub>>MIC</sub> 90%, C<sub>min</sub>/MIC = 0.4) after 24h, and with extended infusion (T<sub>>MIC</sub> 100%, C<sub>min</sub>/MIC = 2.76) after 72h. However, continuous infusion (C<sub>min</sub>/MIC = 35) prevented drug resistance amplification and sterilized the model system. For #68, there was a similar initial bacterial killing profile; however, all regimens were associated with the emergence of a resistant subpopulation after 8h. The MIC of resistant subpopulations exceeded 256 mg/L.

**Conclusions** – To maximize bacterial killing and suppress the emergence of resistance of multiple-beta-lactamases producing *K. pneumoniae* isolates with higher MIC alternative therapeutic strategies are required.

# Presenting Tuesday Evening

Poster No 061

**Evaluation of Direct Inoculation of the BD Phoenix AST System from Positive BACTEC Blood Cultures for the Determination of Same Day Antimicrobial Detection in Comparison to EUCAST Disc Diffusion methods**

Rachel Austin-Hutchison

University Hospitals Plymouth NHS Trust, Plymouth, United Kingdom

**Abstract**

**ABSTRACT WITHDRAWN**

# Presenting Wednesday Evening

Poster No 062

## Characterization and utilization of phages specific to *Campylobacter coli*.

Hung-Hsin Huang, Minh Duc Hoang, Yoshimitsu Masuda, Ken-ichi Honjoh, Takahisa Miyamoto

Department of Bioscience and Biotechnology, Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, Fukuoka, Japan

### Abstract

*Campylobacter* spp. are commonly found in raw meat especially poultry meat. Control of *Campylobacter* in poultry meat is difficult due to the rate of contamination and viable counts of *Campylobacter*. Bacteriophages (phages) have been increasingly exploited to combat the bacterial contamination in food. This study demonstrated the isolation, characterization and application of lytic phages against *Campylobacter coli* (*C. coli*). From 23 different raw beef and chicken meat samples, a total of 16 lytic phages against *C. coli* were successfully isolated and purified. Among these phages, CAM-P21, isolated from beef mince, was morphologically characterized as a unique member of the *Siphoviridae* family, with a broad host range, a higher titer and great stability under various stress conditions. Phage CAM-P21 seems unique since almost all *Campylobacter* phages isolated so far are members of the *Myoviridae* family. One-step growth curve indicated that phage CAM-P21 had a latent period of 60 min and a burst size of 20 PFU/cell. DNA purification and gel electrophoresis revealed that the genome sizes of phage CAM-P21 was estimated to be approximately 15–17 kb. The phage CAM-P21 significantly reduced ( $P < 0.05$ ) the viable counts of *C. coli in vitro* by 2.11 log after 12 h of incubation at 42°C, 2.67 log after 24 h at 37°C and 1.09 log after 48 h at 8°C, compared with untreated controls. These findings suggest that phage CAM-P21 seems to be a potential and promising agent for biocontrol of *C. coli* in food.

# Presenting Tuesday Evening

Poster No 063

## Emerging Coagulase negative *Staphylococci* infection in selected urban and rural communities in Southwest Nigeria

Paul Akinduti<sup>1</sup>, Joshua Osiyemi<sup>2</sup>, Abiola Oladotun<sup>3</sup>, Harriet Ugboko<sup>1</sup>, El-Ashker Maged<sup>4</sup>, Micheal Idowu<sup>5</sup>

<sup>1</sup>Covenant University, Ota, Nigeria. <sup>2</sup>Univeristy of Ilorin, Kwara, Nigeria. <sup>3</sup>Federal University of Agriculture, Abeokuta, Nigeria. <sup>4</sup>University of Mansoura, Egypt, Egypt. <sup>5</sup>University of Ibadan, Ibadan, Nigeria

### Abstract

Coagulase negative *Staphylococci* (CoNS) strains characterized with antibiotic resistance were observed to be substantially associated with various extra-intestinal infections. Therefore, the emerging CoNS strains with potential antimicrobial resistance and possible expression of virulence factors in southwest Nigerian communities were studied.

All 17 CoNS isolated from 256 clinical extra-intestinal samples (including pus, abscess, ear swabs, eye swabs) obtained from out-patients attending three referral health facilities in southwest Nigeria were speciated with Matrix-assisted Laser Desorption/ionization Time of Flight (MALDI-TOF) assay, tested for hemolytic activity, coagulase and biofilm productions. Each strain was genotyped for *nuc*, *tuf*, *spa* and *pvl* markers using multiplex real-time PCR and evaluated for antibiotics susceptibility. Phylo-diversity of the antibiotic resistant CoNS strains was analysed using UPGMA clustering method.

Among the strains, *S. sciuri* have the highest significant prevalence rate among the children less than 5 years and 47.1% rate among males from rural communities. Antibiotic resistance relatedness of *S. sciuri* (from wound, ear and pus) and *S. saprophiticus* (wound) clustered to group A having related antibiogram of high multi-antibiotic resistant index (MARI) but differ in their hemolytic and biofilm productions. Singleton strain of *S. sciuri* isolated from abscess separately clustered having low MARI. Other CoNS from other sources grouped together to B with intermediate level of susceptibility to vancomycin. All the CoNS lack *nuc*, *pvl* and *spa* genes but expressed *tuf* gene.

Emergence of vancomycin-resistant CoNS particularly *S. sciuri* mostly among the rural dwellers in southwest Nigeria require urgent and appropriate geno-surveillance to curb its dissemination and potential outbreaks.



# Presenting Wednesday Evening

## Poster No 064

### **Lack of evidence of association between antimicrobial resistance in E coli and deprivation in Scottish Borders**

Edward James<sup>1</sup>, Anne Duguid<sup>1</sup>, Erin Murray<sup>2</sup>

<sup>1</sup>NHS Borders, Melrose, United Kingdom. <sup>2</sup>Scottish Borders Council, Newtown St Boswell, United Kingdom

#### **Abstract**

##### Background

Many health issues are associated with deprivation and some evidence exists that antimicrobial prescribing is higher in deprived groups. This study examined the relationship between antimicrobial resistance in E coli isolates from the population of the Scottish Borders and deprivation as assessed by the Scottish Index of Multiple Deprivation.

##### Methods

Data regarding urine samples submitted for diagnostic purposes which had been reported as growing E coli was extracted. Antimicrobials for which susceptibility testing had been performed were mapped to standardised antimicrobial categories definitions to produce an index of overall antimicrobial resistance. UK postcode data linked to the specimen data was mapped to data zones. The proportion of E coli isolates within each datazone with different categories of overall resistance was calculated and plotted against its associated Scottish Index of Multiple Deprivation decile.

##### Results

No association was found between overall antimicrobial resistance in E coli urinary isolates and SIMD.

##### Conclusion

During this time period in the Scottish Borders, antimicrobial resistance in E coli does not show an association with deprivation.

# Presenting Tuesday Evening

Poster No 065

## Antibiotics resistance and disinfectants susceptibility of *Listeria* spp. from ready-to-eat food sold in South Africa

Bhekisisa Dlamini<sup>1</sup>, Hattie Makumbe<sup>1</sup>, Frederick Tabit<sup>2</sup>

<sup>1</sup>University of Johannesburg, Johannesburg, South Africa. <sup>2</sup>University of South Africa, Johannesburg, South Africa

### Abstract

A recent (2017 – 2018) *Listeria monocytogenes* outbreak associated with ready-to-eat (RTE) food in South Africa resulted in over 1000 confirmed cases and 218 deaths. The aim of the present study was to evaluate the antibiotic resistance and disinfectant susceptibility of *Listeria* spp. isolated from RTE food using the disc diffusion assay and minimum inhibitory assay. In general, the *Listeria* spp. isolates (n=17) were resistant against ampicillin (100% resistance), while the least resistance (21% resistance) was recorded for gentamicin. All the tested disinfectants (4) were effective against all *Listeria* spp. with MIC values (0.10 – 40.00 mg/ mL) lower or equal to the suppliers recommended concentrations. Overall, chlorine-based disinfectants were the most effective against *Listeria* spp. With the disc diffusion assay, the zone of inhibition of the disinfectants ranged from 8 – 24 mm. In general, acid-based disinfectants appeared more inhibitory against the *Listeria* spp. All the *Listeria* spp. were sensitive to preferred antibiotics used to treat Listeriosis. The fact that the MIC for some disinfectants was equal to the recommended concentration by the supplier is a cause for concern since the efficacy of sanitizers can be influenced by the environment.

# Presenting Wednesday Evening

## Poster No 066

### EVALUATION OF IN-VITRO ACTIVITY OF FOSFOMYCIN I.V. IN ESCHERICIA COLI, KLEBSIELLA PNEUMONIAE AND PSEUDOMONAS AERUGINOSA BLOODSTREAM INFECTION (BACTERAEemia)

Joseph Suich<sup>1,2</sup>, Damian Mawer<sup>2</sup>, Marian Van der Woude<sup>3</sup>, Deborah Wearmouth<sup>1</sup>, Alison Eyre<sup>1</sup>, Phillipa Burns<sup>1</sup>, Ton Smeets<sup>4</sup>, Gavin Barlow<sup>1</sup>

<sup>1</sup>Hull University Teaching Hospitals NHS Trust, UK, Hull, United Kingdom. <sup>2</sup>York Teaching Hospital NHS Trust, UK, York, United Kingdom. <sup>3</sup>Hull York Medical School, UK, York, United Kingdom. <sup>4</sup>Nordic Pharma B. V., Baam, Netherlands, Baarn, Utrecht, Netherlands

#### Abstract

**Background:** Fosfomycin has retained activity against many multi-drug resistant (MDR) Gram-negatives, and may be useful against extended spectrum beta-lactamase (ESBL) producing and carbapenem-resistant Enterobacteriaceae. There are few data from the UK on the susceptibility of invasive Gram-negative isolates to fosfomycin, especially in the era of increasing use of oral fosfomycin for UTIs.

#### Materials/methods:

1. We evaluated, in 100 consecutive Gram-negative bloodstream infections (BSI), the *in-vitro* activity of fosfomycin. Disc diffusion and MIC test strip methods applying revised EUCAST guidelines for fosfomycin were used.
2. A secondary objective was testing for synergy in combination with 10 further antibiotics. Isolates were selected if:
  - a) Fosfomycin resistant
  - b) AMP-C/ESBL/carbapenemase producers (or carbapenem resistant)
  - c) 'MDR': defined as 'resistance to  $\geq 3$  classes of antibiotics' (based on prior routine sensitivity testing).For eligible isolates, MICs were determined individually, and subsequently in combination using the MTS 'cross' synergy method.

**Results:** 96/100 isolates were susceptible to fosfomycin by MIC test strip. 30/100 isolates were eligible for synergy testing. Synergy was most commonly detected between fosfomycin and piperacillin/tazobactam (32.1%), ceftazidime/avibactam (30%), and temocillin (28.5%). An additive effect was most commonly detected with aztreonam (85.7%) and meropenem (82.1%), but 100% indifference was found with tigecycline. No antagonism was identified.

**Conclusions:** Synergistic or additive effects were detected for beta-lactam/fosfomycin combinations in a high proportion of isolates; >80% for all suggesting such combinations should be preferred when using fosfomycin combination therapy. Agents with a different site of antibiotic action, were more likely to result in indifference.

# Presenting Tuesday Evening

Poster No 067

## SUSCEPTIBILITY OF MICROORGANISMS ISOLATED FROM OTITIS MEDIA PUS TO CIGARETTE CAPSULE AND *Nicotiana tabacum*

Abidemi Ojo<sup>1</sup>, Abiola Oladotun<sup>1</sup>, Seun Adebajo<sup>1</sup>, Olugbenga Ojo<sup>2</sup>, Seun Ejilude<sup>3</sup>

<sup>1</sup>Federal University of Agriculture, Abeokuta, Nigeria. <sup>2</sup>Madonna University, Elele, Port-harcourt, Nigeria.

<sup>3</sup>Sacred heart, Lantoro, Abeokuta, Nigeria

### Abstract

Otitis media is a perforation of the middle ear caused by pathogenic microorganisms which leads to hearing impairment. There is a need for alternative methods to the use of antibiotics in combatting the impairment owing to the challenge of antibiotics resistance. This study is aimed at identifying and determining susceptibility pattern of bacterial isolates from otitis media patients to cigarette capsule and *Nicotiana tabacum* extract. Forty eight samples were collected from a tertiary hospital in Abeokuta Ogun state- 28 (58.33%) from males and 20 (41.67%) from females with highest occurrence in children below the age of 5 (60%). *Klebsiella pneumonia*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Streptococcus pneumoniae* and *Proteus mirabilis* were isolated. The two different products of cigarette capsules used showed significant ( $P < 0.05$ ) zones of inhibition on *Pseudomonas aeruginosa* and *Streptococcus pneumoniae* respectively. Results also revealed that *Nicotiana tabacum* extract had significant effect ( $P < 0.05$ ) on *Klebsiella pneumonia*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Streptococcus pneumoniae* at 0.5 mg, 1.0mg and 2.0mg. This study shows the antibacterial activity of *Nicotiana tabacum* methanolic leaf extract making it a promising raw material in the production of new classes of antibiotics against otitis media infection.

# Presenting Wednesday Evening

Poster No 068

## Carbon Quantum Dots Conjugated CRISPR-cas9-gRNA Antimicrobials Against Antibiotic Resistant *Uropathogenic Escherichia coli*

Surbhi Gupta<sup>1</sup>, Neha Jindal<sup>2</sup>, Pooja D<sup>2</sup>, Manisha Yadav<sup>1</sup>

<sup>1</sup>Dr. B. R. Ambedkar Centre for Biomedical Research, University of Delhi, Delhi, India. <sup>2</sup>CSIR-Central Scientific Instruments Organisation, Sector-30C, Chandigarh, Chandigarh, India

### Abstract

#### Background:

Urinary tract infections (UTIs) are among the most common bacterial infections. UTI, although treatable, is now becoming increasingly tough to control because of rampant antimicrobial resistance in the Enterobacteriaceae family, particularly in *Escherichia coli*. Due to increased resistance, there is an exigency to develop novel therapeutic targets to combat these resistance strains. Clustered regularly interspaced short palindromic repeats (CRISPR)-technology has emerged as an important tool for gene editing based therapeutics.

#### Methods:

Here, we report an efficient gene editing strategy based on direct delivery of Cas9 and gRNA into Uropathogenic *E. coli* (UPEC) isolate. P-fimbriae plays major role in bacterial adherence to the uroepithelium through the Gal $\alpha$ 1-4Gal-binding PapG adhesin. We have covalently conjugated cas9 protein with CQD's using EDC/NHS chemistry and targeted papG gene by synthesizing sequence specific complimentary gRNA. The targeting efficiency was confirmed by performing adherence assay, biofilm assay, flow cytometry and qRT-PCR.

#### Results:

There is a significant reduction of adherence ability of papG mutant strain as compared to control observed through microscopy. Also, significant reduction in biofilm formation (p-value < 0.001) was noticed in treated sample ( $0.565 \pm 0.003$ ) vs control ( $1.020 \pm 0.008$ ). The relative qRT-PCR data of knockdown strains (p<0.05) also revealed the dramatic decrease in the expression of papG gene, taking 16s rRNA gene as an endogenous control for normalization. The same result was observed from flow cytometry and SEM analysis.

#### Conclusion:

Hence, we conclude that CQD-CRISPR-Cas9-gRNA could be a novel therapeutic strategy for the eradication or treatment of antibiotic resistant pathogenic *E. coli*-based pathologies.

# Presenting Tuesday Evening

Poster No 069

## Antimicrobial Efficacy Study using a light disinfection device for Health Care-Associated Infections

Qurat UL AIN, King Lun YEUNG

The Hong Kong University of Science & Technology, Hong Kong, Hong Kong

### Abstract

Multidrug-resistant organisms (MDROs) are a global challenge especially in long-term care facilities (LTCFs). Older people are more vulnerable to infection due to the senescence of their immune system, resulting in more frequent and longer hospitalization increased cost of care, hence greater workload. Even in the strict hospital environment, less than half of the environmental surfaces sampled were not properly cleaned and this poses a significant risk of disease transmission.

In this study, new light-based surface disinfection technology can complement existing hospital practices to address an important public health problem. Its strategy is based on high-intensity narrow-wavelength (Hi-NW) light sources for surface decontamination of microorganisms commonly found in health care environments using synergic effects of blue LEDs at 405 & 470 nm and UV LED at 278nm, which were not previously investigated together.

A retrospective review of MDRO records has been conducted throughout the study period. Organisms were identified using special agar media and treatment with Hi-NW prototype was tested in the LTCF surfaces.

The prototype results show 99.9% & 88.9% bactericidal rate against MDROs for 5minutes and 2 minutes exposure time on flat surfaces, respectively. Work is still in progress for the 30-second cycle exposure of prototype.

This discovery will support the use of the device as a high material compatibility technology with hospital items, or in other common areas, such as public areas and homes, where frequently touched surfaces play an important role in disease transmission. There is an utmost need for this tool to prevent the proliferation of MDROs

# Presenting Wednesday Evening

Poster No 070

## Phytochemical Screening and Antibacterial Activity of leaf extracts of *Musa sapientum* against Multi-drug Resistant Pathogens isolated from HIV Patients.

TOSIN OLATERU

THE POLYTECHNIC IBADAN, IBADAN, Nigeria. UNIVERSITY OF IBADAN, IBADAN, Nigeria

### Abstract

In recent years, there has been an increased attention giving to the search of new antimicrobial compound as a result of the fearsome rate in the development of antibiotic resistance by microorganisms to the commonly used antibiotics. In this study, the phytochemical screening of Banana leaves (*Musa sapientum*) was carried out and tested for their antibacterial activity against pathogenic bacteria obtained from HIV patients. Pathogenic bacteria consisting of *Escherichia coli*, *Klebsiella oxytoca*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* were obtained from department of Microbiology, University College Hospital and their identity were confirmed using standard bacteriological procedure. Antibiotics susceptibility test was carried out on the pathogens while phytochemical screening of the methanolic and aqueous extracts leaves of *Musa sapientum* was evaluated using the methods of Association of Analytical chemists. Antibacterial activity of different concentration of the plant extract was carried out on the pathogens and the data obtained was subjected to statistical analysis. The result shows that all the pathogens were resistant to at least four out of the eight tested antibiotics; the leaf extracts of *Musa sapientum* contain Glycosides, Anthraquinine, Terpenoids, Tannins and Saponins. The plant extract inhibited the growth of the pathogenic bacteria at different concentrations compared to the reference antibiotic. This study indicates that *Musa sapientum* contain bioactive ingredients that can be further evaluated for the manufacture of antimicrobial drugs

# Presenting Tuesday Evening

Poster No 071

## Hypervirulent *Klebsiella pneumoniae* causing endogenous endophthalmitis

Morgan Rayner-Philipson, Katherine Sharrocks, Erika Damato, Elinor Moore, Theodore Gouliouris

Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

### Abstract

A 78 year old male presented with a one day history of significant central visual loss in his right eye and new onset floaters in his left eye. Vitreous culture yielded ampicillin-resistant *Klebsiella pneumoniae* while colonies exhibited hypermucoviscosity, suggestive of a hypervirulent phenotype. Capsular typing and genomic analysis identified virulence factors that confirmed a diagnosis of hypervirulent *Klebsiella pneumoniae* syndrome, with endogenous endophthalmitis. Despite appropriate intravitreal and systemic antibiotic therapy, substantial visual impairment was sustained.

The bacterial capsule is a virulence determinant in *Klebsiella sp.*. The hypermucoviscous phenotype results from an exopolysaccharide coating that affords protection from the host immune system. Indeed, many genomic factors associated with hypervirulence are implicated in capsule synthesis. The 'string test' identifies hypermucoviscous bacteria and may alert clinicians to the likelihood of a hypervirulent strain before results from genomic analysis are available.

Endophthalmitis is a potential consequence of metastatic infection by hypervirulent *Klebsiella pneumoniae*, now widespread across South East Asia. The significance of this case lies in the recognition of the syndrome in a patient with no travel history to this region. A distinguishing feature of the hypervirulent strain of this bacteria is its ability to infect healthy individuals in the community. Its rise in Western Europe and North America therefore requires the vigilance of microbiologists and other clinicians.



# Presenting Wednesday Evening

Poster No 072

## A case of Mycobacterium Tuberculosis Discitis

Hussnain Javaid, Omar Rahama, Sulman Hasnie

Bradford Royal Infirmary, Bradford, United Kingdom

### Abstract

Extra-pulmonary tuberculosis (TB) represented 14% of 6.4 million incident cases reported globally in 2017<sup>1</sup>. In Europe the percentage was about 20% during the years 2002-2011, with 3.9% of these patients having spinal TB.<sup>2</sup>

We present a case of a 62 year old lady with past history of pernicious anaemia, vitiligo and osteoporosis. She presented with 9 months history of non-traumatic, progressive mid-thoracic backache. She did not report any respiratory or constitutional symptoms. Additionally, there was no history of high risk contact or recent travel history. Clinical examination was only remarkable for spinal tenderness in the mid-thoracic region.

An MRI-spine revealed features suggestive of TB discitis involving T5/T6 discs and adjacent vertebral bodies.

She underwent a CT guided biopsy of the vertebral body which grew fully sensitive M. tuberculosis. The CT showed evidence of left lung apex involvement. Subsequently, she was started on standard quadruple therapy with a plan to treat for a total of 9 months.

Pott's disease or tuberculosis of the spine is the most common form of TB involving the skeleton. The thoracic vertebrae are more commonly affected. Other locations include sacro-iliac joints, sternum and other bones or joints. Even though mortality is low from vertebral column involvement, the morbidity is high especially due to spinal cord compression or kyphosis.<sup>3</sup>

Early diagnosis and management is crucial to prevent disability and serious complications. Most patients are managed medically although surgery may have a role in case of spinal cord compression, instability or occasionally to drain large abscesses.

# Presenting Tuesday Evening

Poster No 073

## Microbiological spectrum and susceptibility patterns of pathogens causing endocarditis in intravenous drug users in Teesside

Chris Lawrence

NHS South Tees, Newcastle, United Kingdom

### Abstract

This retrospective cohort study looks at the microbiological spectrum and susceptibility patterns of pathogens causing endocarditis in intravenous drug users admitted to a large teaching hospital in the Teesside area over a 3 year period. We identified 32 separate cases of endocarditis diagnosed in 27 intravenous drug users admitted to hospital from April 2013 to April 2018, median age 36, 20 Male and 7 Female. Potential cases were identified from discharge coding and confirmed using modified Duke's criteria.

Twenty-eight of the 32 cases of endocarditis were bacteraemic. Fourteen cases underwent valve replacement. 3 of 14 cases had positive valve culture and 1 positive on valve 16S PCR. Two patients culture negative on blood were positive on valve culture.

Overall, 41 organisms were isolated with 5 patients having multiple pathogens present. Two (5%) Gram-negative bacteria, 35(83%) Gram-positive bacteria and 4(10%) fungi.

Staphylococcus sp. were identified in 22 patients of which 3 were coagulase negative Staphylococci on multiple blood cultures. MSSA was identified in 18 of 32 patients on blood culture and 3 of 14 on valve culture (two of which were isolated on both valve and blood). MRSA was not isolated. One anaerobe, six streptococci and 2 enterococci completed the remaining cases.

Two patient isolates were AmpC beta-lactamase-producing (6% [2/32 patients]). Twenty of the 32 patient cases were fully sensitive to flucloxacillin. Candida sp were isolated on 3 occasions from blood and on each occasion polymicrobial cultures were identified including mixed Candida sp. in one case.

# Presenting Wednesday Evening

## Final category: Clinical Cases

### Poster No 074

#### **A case of recurrent aerococcus urinae infective endocarditis with associated cerebral embolic phenomena.**

Pooja Ravji, Nicholas Brown

Addenbrookes Hospital, Cambridge, United Kingdom

#### **Abstract**

*Aerococcus urinae* is a gram positive, alpha haemolytic cocci that rarely is associated with urinary tract infections, bacteraemia and infective endocarditis. We describe a case of recurrent aerococcus urinae endocarditis with associated cerebral embolic phenomena.

A 76 year old man presented with sudden onset right sided weakness and dysphasia. CT and MRI head imaging showed infarcts in the left pons and cerebellum suspicious of embolic aetiology.

He had a background of a prosthetic mitral valve replacement following an episode of culture negative infective endocarditis associated with discitis and a psoas abscess 3 years previously. A 16S rRNA PCR on valve tissue had yielded an aerococcus urinae.

The anaerobic bottle of a blood culture taken on his present admission flagged positive at 48 hours but no organisms were seen on gram stain. However, Matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI – TOF MS) identified an aerococcus urinae 4 hours later. The same organism was also identified in the aerobic bottle which had flagged positive later the same day with gram positive cocci in clusters. Susceptibility testing revealed a MIC (Minimum Inhibitory Concentration) of 0.032, 1 and 8mg/L for penicillin, vancomycin and gentamicin respectively.

A transthoracic echocardiogram confirmed reoccurrence of endocarditis with a 1.5cm lesion on the mitral valve. There was no evidence of other embolic phenomena. The patient was managed medically with initial treatment with intravenous vancomycin and gentamicin followed by benzylpenicillin and gentamicin for 6 weeks. The patient made slow rehabilitative progress and remained debilitated by his right sided hemiparesis.

# Presenting Tuesday Evening

Poster No 075

## Cardiobacterium hominis endocarditis complicated by Aortic root abscess: A case report

Rob Holden<sup>1</sup>, Monika Pasztor<sup>2</sup>, Rashmi Lewkebandara<sup>1</sup>, Ekene Kenneth Okonkwo<sup>1</sup>

<sup>1</sup>Royal Lancaster Infirmary, Lancaster, United Kingdom. <sup>2</sup>Royal Preston Hospital, Preston, United Kingdom

### Abstract

The present report describes a case of infective endocarditis complicated with aortic root abscess caused by *Cardiobacterium hominis* (*C. hominis*) in a 56 year old man. *C. hominis* is a microaerophilic, pleomorphic Gram-negative bacillus and member of the HACEK group (*Haemophilus* species, *Aggregatibacter actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens* and *Kingella kingae*) a group of bacteria known to be a rare cause of endocarditis. With prompt diagnosis and initiation of antimicrobial and surgical management, a successful outcome was achieved.

# Presenting Wednesday Evening

## Poster No 076

### Study of the clinical and microbiological profile of patients with endocarditis and cancer – A case series from Tertiary care cancer hospital in Western India

Viplov Vaidya, Aruna Alahari Dhir, Sheela Sawant, Anuprita Daddi, Kush Mehrotra

Tata Memorial Centre, Mumbai, India

#### Abstract

##### Background:

Endocarditis is rare and can be life-threatening in patients with cancer. We sought to evaluate the clinical and microbiological profile of patients of cancer who developed endocarditis.

##### Methods:

We retrospectively analyzed transthoracic echocardiograms done in our hospital along with the clinical data stored in computerized medical records between 2016-2018. Infective Endocarditis was diagnosed by using modified Duke criteria. Patients with valvular verrucae and sterile blood cultures were considered to have culture-negative endocarditis.

##### Results:

There were 10 patients of cancer who were diagnosed with endocarditis. All patients had developed endocarditis after the diagnosis of cancer. 5(50%) patients had hematological malignancy. The aortic valve was involved in 5 (50%) patients. Blood cultures were sterile in 7(70%) patients. Out of the 3 patients with positive blood cultures, 2 were positive for *Klebsiella pneumoniae* and 1 grew *Candida tropicalis*.

5 (50%) patients had concurrent pneumonia. The most common intravenous antibiotics given were cefoperazone plus sulbactam, teicoplanin, and meropenem, while most common antifungals given were caspofungin and voriconazole. The patient with Candidemia underwent surgical removal of vegetation as advised by a cardiologist. Histopathological examination and staining of the excised vegetation of this patient revealed *Cryptococcus* species. 6 (60%) patients developed congestive cardiac failure. 4(40%) died within 4 weeks of diagnosis of endocarditis, out of which 3 were culture-negative endocarditis.

##### Conclusions:

In our case series, none of the blood cultures grew gram-positive bacteria and an increased proportion of culture-negative endocarditis was noted. The mortality is high in patients of cancer with endocarditis.

# Presenting Tuesday Evening

Poster No 077

## Cruising for bruising

Uli Schwab

Royal Victoria Infirmary, Newcastle, United Kingdom

### Abstract

A 83 year old man presents with anorexia, rigors and cough after a cruise along the Scandinavian coast/British Isles. Febrile 38.7C, tachycardic but haemodynamically stable, with marked thrombocytopenia(41), abnormal PT(15), renal impairment, raisedCRP, normal WC's including differential and CXR. Throat swab, serial blood cultures, MSU culture-negative. Despite IVfluids, broad spectrum antibiotics for presumed lower respiratory tract infection with AKI and delirium pyrexia persists, CRP rises to 223, and he develops abdominal pain, jaundice (Bilirubin158, AST249, ALT94, AlkP277), worsening renal function (Crea543) oliguria, anaemia (Hb7.6, haptoglobin<0.03g/l) with worsening confusion and bruising suggestive of a hepato-renal syndrome with DIC prompting transfer to the regional ID unit. PMH includes AVR/TAVI, PUD, Waldenstroem's macroglobulinaemia previously receiving IVIG's and Rituximab, last 3 months prior. Extensive travel history, Nigeria ('60ties,'90 and 2003)), Kenya, Malaysia/Taiwan, Indian Subcontinent ('70ties), South Africa ('97) Korea (2011). A blood film suggest malaria 20-30%parasitaemia, posing speciation difficulty. Of note he spent most summers on Great pond/Belgrade(Maine/USA), most recently 4 weeks before presentation, pointing towards epidemiological Babesiosis exposure particularly in an immunocompromised individual with a negative RDT for P.falciparum, later confirmed as 22% parasitaemia, B.microti ELISA+ve, IFAT+ve1:320 (negative blood-borne-virus-screen, Leptospira-DNA, Hantavirus-IF, B.burgdorferi and Anaplasma-IF) . Despite IV Cefotaxime, Artesunate, po Doxycycline, Atovaquone/Azithromycin together with IVClindamycin/Quinine, - a pan-reactive auto-Ab panel, prevented Exchange transfusion-, he deteriorates rapidly despite full organ support and dies from multi-organ-failure. Ferritin elevation >16.000 suggests Haemophagocytic Lymphohistiocytosis confirmed on post-mortem. Epidemiology, diagnosis, prognosis and treatment of Babesiosis will be discussed.

# Presenting Wednesday Evening

## Poster No 078

### Easy to get, but not always easy to treat - Clinical and serological failure with Azithromycin in Syphilis: Time to adapt national guidelines?

Daisy Ogbonmwan, Uli Schwab

Royal Victoria Infirmary, Newcastle Upon Tyne, United Kingdom

#### Abstract

##### Background

Data since 2014 has shown a rise in the incidence of Syphilis especially amongst heterosexuals. In national guidelines, Macrolides remain an alternative treatment option although their efficacy has been long disputed.

We describe a case of a patient with clinical and serological failure with Azithromycin treatment.

##### Methods

A 46 year old female presented with painful genital ulceration confirmed as primary syphilis. Sexual transmission infection testing was negative. She described an allergy (rash) to Amoxicillin and was given Doxycycline 100mg twice daily for 14 days. On day 5 she developed an urticarial rash and was changed to Azithromycin, 2g stat and 500mg daily for 10 days.

##### Results

There was initial serological response in her rapid plasma reagin (RPR) to 1:2 from 1:8 at 1 month, but at 5 months an RPR of 1:64 was seen with signs of secondary syphilis - a rash and a sore mouth. Re-infection was ruled out, she was re-treated with Azithromycin and her RPR reduced to 1:2, but she had a persistent macular rash.

Following review by Infectious Diseases, 14 days of intravenous Ceftriaxone 1g daily was given. On day 10, her RPR rose to 1:64 but 3 months after fell to 1:4 and has been serofast since without further signs of Syphilis.

##### Conclusion

Patients treated with Macrolides should be closely monitored. Consideration should be given for desensitisation in patients with reported Penicillin allergy. As with pregnancy, consideration should be given to the removal of Azithromycin as an alternative treatment in national guidelines.

# Presenting Tuesday Evening

Poster No 079

## Snorting Staphylococcus Aureus

Amy Belfield<sup>1</sup>, Uli Schwab<sup>1,2</sup>

<sup>1</sup>Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle, United Kingdom. <sup>2</sup>Newcastle University, Newcastle, United Kingdom

### Abstract

Rates of cocaine use in the UK remain high and Physicians need to be familiar with pleuropulmonary complications associated with illicit use. Respiratory symptoms (e.g cough productive of carbonaceous material/chest pain/dyspnoea/haemoptysis/wheeze) are quite common after cocaine exposure and can lead to barotrauma/asthma/ischaemic-airways-necrosis/pneumonia/interstitial-lung-disease/pulmonary-hypertension, not only after smoking volatilized crack cocaine and the combustion products/associated substances (tobacco/heroin/talc).

Proposed mechanisms that cause this, relate to the effect of cocaine on alveolar macrophages, intermixed substances and bacterial contamination.

A normally well, HIV-negative female who habitually snorts cocaine, presents with 40°C fever, chest pain and sweats. Although a smoker, she denies IVDU/smoking crack-cocaine. CXR shows a 5.5 cm thick walled left upper lobe lung abscess, associated with surrounding ground-glass consolidation, broadly based on the anterior pleura, but originating in the lung, infiltrating the anterior chest wall with reactive intercostal muscle changes on CT. She had no evidence of, nor risk factors for *S. Aureus* bacteraemia such as skin disorder, prosthetic devices, or immunosuppression. *S. Aureus* was isolated only on transcutaneous aspiration of abscess. Good therapeutic clinical/biochemical/radiological response to 6 weeks of antibiotics via OPAT.

Nasal insufflation of cocaine may cause lung complications such as lung abscess via primary infection of the lung rather than haematogenous spread. This may be due to contamination of cocaine when mixing it with other substances or the effects of cocaine on alveolar macrophages.



# Presenting Wednesday Evening

## Poster No 080

### ***Myroides odoratimimus* necrotising fasciitis and recurrent bacteraemia in an immunosuppressed patient with chronic leg ulcers: an emerging pattern?**

Aikaterini Ainarozidou, Andree Evans

Royal Cornwall Hospitals NHS Trust, Truro, United Kingdom

#### **Abstract**

**Introduction:** A 58yr old with inflammatory arthritis and diabetes, taking biologics, methotrexate and prednisolone, presented unconscious, hypotensive in acute renal failure. She had chronic leg ulcers and blistering, necrotic skin on both legs. After resuscitation, empiric meropenem and clindamycin, and urgent surgical debridement of her legs, she spent 2 days on ITU. A rapid recovery followed with discharge home after 7 days.

**Methods:** Histological samples were consistent with necrotising fasciitis. Blood and tissue cultures grew a yellow pigmented, oxidase positive, Gram negative bacillus with a distinctive fruity smell. 16S PCR confirmed *Myroides odoratimimus*. The patient was readmitted 3 months later with unhealed leg ulcers, sepsis and blistering cellulitis

Blood cultures again grew *Myroides* spp. She recovered with meropenem and avoided ITU admission.

**Discussion:** Review of laboratory isolates over 2 years revealed a previous fatal case of *Myroides* bacteraemia in an 87year old woman with leg ulcers and possible necrotising fasciitis

Two further isolates were recovered from community samples:

- A cat bite in a 55 year old woman with alcohol excess.
- A chronic diabetic foot infection in an 80year old man.

Neither patient was admitted to hospital.

A PubMed search for “*Myroides*” yielded 107 results. Most detailed the wide environmental distribution, multiple antibiotic resistance, and biofilm forming ability of the genus - worrying attributes in organisms causing infection in immunosuppressed patients.

Eleven of the twenty-three clinical papers described SSTI in patients with diabetes, renal disease, cirrhosis or other immunosuppression, including 3 of the 4 reported bacteraemias. Our cases fit well with this pattern.

# Presenting Tuesday Evening

## Poster No 081

### An unusual opportunistic infection in a malnourished patient on dialysis

Matthew Powell, Ruth Shorrocks, Samantha Hayward, Ed Moran

Southmead Hospital, Bristol, United Kingdom

#### Abstract

##### Introduction:

A 32 year old lady developed multiple distinct, purple, raised, itchy lesions on her limbs, during a prolonged hospital admission. The lesions developed over six to eight weeks with no evidence of improvement. One lesion was biopsied and sent for analysis.

The patient had a background of end stage renal failure from Anti-glomerular basement membrane (Anti-GBM) disease and she went on to receive a renal transplant. Eleven months prior to her hospital admission her transplant failed from de-novo focal segmental glomerulosclerosis. She had been admitted for 9 months with an eating disorder and malnutrition. She had been off any immunosuppressive agents for 6 months at the time that the lesions appeared.

##### Methods:

The lesion biopsied was consistent with a dermal abscess. The Ziehl-Neelsen stain was negative but a mycobacterium was cultured. This was confirmed to be *Mycobacterium chelonae* on reference lab testing (sensitivities awaited). She had no other lesions of concern on imaging.

##### Results:

Due to the disseminated nature of the lesions she was started on a 2 week course of intravenous amikacin with oral azithromycin and levofloxacin; the oral components to be continued for 2 to 6 months dependent on clinical response.

##### Discussion:

*Mycobacterium chelonae* is a nontuberculous mycobacterium abundant throughout the environment. It commonly causes skin lesions or cellulitis as well respiratory disease and urinary catheter colonization. It is a less common Rapidly Growing Mycobacterium (RGM) which usually occurs in patients on immunosuppression. The immunosuppressed state in this case was that caused by dialysis and malnutrition.

# Presenting Wednesday Evening

Poster No 082

## Intravenous drug use causing *Enterococcus Faecalis* bacteraemia, mycotic pulmonary artery aneurysm and suspected Mucormycosis

Katherine Cobb, [Helen Callaby](#), Nikolas Rae

NHS Tayside, Dundee, United Kingdom

### Abstract

#### Background

33 year old previously fit and well lady with a history of previous drug use presented generally unwell with shortness of breath and cough.

#### Methods

Initial investigations demonstrated marked inflammatory response with bilateral pneumonia on chest xray. She was initially treated for severe community acquired pneumonia. On day 3 of admission blood cultures isolated *Enterococcus faecalis*, which was later also isolated in sputum.

#### Results

Transthoracic echo demonstrated no evidence of vegetations to suggest endocarditis. Despite appropriate antibiotic switch inflammatory markers increased, and a groin abscess was suspected on clinical examination leading to CT angiogram in addition to CT thorax. Imaging demonstrated left ileofemoral DVT and a large pulmonary artery aneurysm with multiple cavitating pulmonary lesions. Following discussion with cardiothoracics the patient was transferred to a cardiothoracic centre for left lower lobectomy and lingulectomy. Histopathological perioperative samples showed branching fungal hyphae within multiple blood vessels, although 18s PCR returned as negative. The patient had a good clinical response with IV Amoxicillin and antifungal therapy - Oral Posaconazole was used as she suffered an adverse reaction to liposomal Amphotericin B.

#### Discussion

Final impression was of mycotic pulmonary artery aneurysm caused by *Enterococcus faecalis* with suspected mucormycosis as result of intravenous drug use. This case highlights the increased risk of mucormycosis in people who inject drugs.

# Presenting Tuesday Evening

Poster No 083

## Gram-negative Galore and the Gut

Shobana Anpalakhan, Uli Schwab

Newcastle upon Tyne Hospitals, Newcastle upon Tyne, United Kingdom

### Abstract

An 81-year-old diabetic man with PAF, pleural thickening due to benign fibrous pleuritis and a PPM developed rigors/pyrexia (39°C) with no localising signs of infection. Blood cultures grew *Pseudomonas aeruginosa* (May 2017) and *Enterococcus faecalis* (November 2017), MSU was negative and imaging was normal. Readmitted in May 2018 and discharged clinically well with CRP 40 and no acute abnormalities on investigations, he returned with further rigors the following day with *E. coli* and *Enterococcus faecium* bacteraemia, treated with Tazocin/Tigecycline. CT colonography revealed a primary recto-sigmoid tumour with high-grade dysplasia on biopsy. In July 2018, he developed a *Pseudomonas aeruginosa* bacteraemia responding to Tazocin/Ciprofloxacin. Planned surgery was delayed due to anaesthetic instigated pre-operative cardiac rehab optimisation. In August 2018, further rigors/pyrexia were empirically treated with Tazocin/Teicoplanin/Amoxicillin for 3 weeks covering a *Staph epidermis/capitis* bacteraemia. He underwent an open Hartmann's with total mesorectal excision two weeks later, complicated by pre-sacral collections drained transcutaneously. Suboptimal antibiotic cover however led to further *pseudomonas* bacteraemia three weeks later and *pseudomonal* bacterial peritonitis three months later, managed with prolonged meropenem/ciprofloxacin therapy. TTE two months post-discharge showed a 1cmx0.5cm mass on the RV lead of his pacemaker leading to its removal. Repeat TTE showed tricuspid valve endocarditis with a 2.2cmx0.3cm mobile mass and severe TR. Six weeks of Meropenem therapy achieved sterilisation without further complications. Infectious diseases specialist input should be sought early and can be pivotal in appropriate source control and adequate antibiotic management following organism identification.

# Presenting Wednesday Evening

Poster No 084

## Key factors around successful management of CPE infection in a patient with pancreatic collection

Zhaowei Zhou<sup>1</sup>, Sulman Hasnie<sup>2</sup>

<sup>1</sup>specialist registrar, Department of Surgery, Bradford Royal Infirmary, Bradford, United Kingdom.

<sup>2</sup>Consultant Microbiologist, Bradford Royal Infirmary, Bradford, United Kingdom

### Abstract

Carbapenemase-Producing Enterobacterales (CPE) are threat to public health as they are resistant to one of the broad-spectrum antibiotic classes (Carbapenems) in clinical use.

In this report we highlight the need for optimal choice and duration of antimicrobial therapy in combination with source control for successful management of CPE infection.

A 52-year old male was admitted under general surgery with CT confirmed severe pancreatitis. He was commenced on cefuroxime and metronidazole for associated cholecystitis based on local guidelines. Treatment was gradually escalated to Meropenem due to intermittent pyrexia and inadequate response to standard antimicrobial therapies with no obvious source control solution. Following 39 days of Meropenem the fifth CT scan showed drainable peri-pancreatic collections. The drained pus sample grew *Escherichia coli* and *Bacteroides* species. The *Escherichia coli* were confirmed to be CPE gene (KPC) positive by PCR and sensitive to Tigecycline and Gentamicin but resistant to Meropenem and Ciprofloxacin based on MicroScan automated sensitivity panel.

Initially Tigecycline was commenced, however, due to unsatisfactory clinical progress treatment escalated to Ceftazidime/Avibactam and Co-Trimoxazole and patient completed a three-week course. The percutaneous drain was upgraded twice to facilitate drainage. Follow-up CT showed reduction of collection and patient discharged after 115-day stay.

This case demonstrated that CPE infection should be suspected in patients with persistent fever after a prolonged course of carbapenem treatment. A prompt laboratory diagnosis and effective multidisciplinary collaboration among microbiologists, surgeons and radiologists proved to be successful in achieving source control of CPE infection in this case.

# Presenting Tuesday Evening

Poster No 085

## Expedient management of *Listeria monocytogenes* endovascular graft infection in an immunosuppressed patient.

Hannah McCormick, Louis Lau, Michael Hunter, Helena Bond, Judith Troughton

Royal Victoria Hospital Belfast, Belfast Health and Social Care Trust, Belfast, United Kingdom

### Abstract

#### Introduction

*Listeria monocytogenes* is a rare cause of infection following endovascular aneurysm repair (EVAR); there remains lack of consensus on the optimal management strategy, in particular the need for life-long suppression. Despite this organism's increased pathogenicity amongst immunosuppressed hosts, to date no EVAR infections have been described in this cohort.

Here we describe the first case of *Listeria monocytogenes* EVAR infection in an immunocompromised host.

#### Case description

A 75-year-old gentleman presented with a 5-day history of back pain, fever and dysuria despite 3 days of oral co-amoxiclav for presumed urinary tract infection. There was no recent gastrointestinal upset. Admission blood and urine cultures were negative.

Past medical history included on-going methotrexate therapy for rheumatoid arthritis and EVAR of the infra-renal aorta in 2013.

A CT abdomen, performed to exclude intra-abdominal pathology, revealed an enlarged aneurysmal sac and fat stranding, secondary to inflammation. A CT-guided sample of aneurysmal fluid was obtained before commencing empirical piperacillin-tazobactam and vancomycin; *Listeria monocytogenes* was isolated from subculture after 5 days broth enrichment. The EVAR was removed and replaced 7 days after admission and antimicrobials rationalised to intravenous amoxicillin, ciprofloxacin and metronidazole.

The patient completed 6 weeks intravenous therapy, then commenced lifelong suppressive therapy with oral co-trimoxazole 960mg OD.

#### Discussion

*Listeria monocytogenes* EVAR infection has been described in only 8 patients; this is the first in an immunosuppressed patient. This case adds to the literature by outlining a putative management strategy, involving explanation and life-long antimicrobials, for immunocompromised patients with *Listeria monocytogenes* EVAR infection.

# Presenting Wednesday Evening

Poster No 086

## Hubris Haemoptysis - *Mycobacterium kansasii*, are you taking the piss?

Francesca Peters<sup>1</sup>, Uli Schwab<sup>1,2</sup>

<sup>1</sup>Royal Victoria Infirmary, Newcastle Upon Tyne, United Kingdom. <sup>2</sup>Newcastle University, Newcastle Upon Tyne, United Kingdom

### Abstract

#### Background:

A 33 year old HIV-negative Gambian, who hadn't left the UK for 7 years, presents with haemoptysis, 6 month cough, sweats, and weight loss. He completed standard treatment for presumed pulmonary TB in Banjul (2006), with a completely normal CXR (2015). He was normotensive, with low grade fever, Hb 110, normal clotting, mild neutropenia, CRP 11, ESR 88, with bilateral cavitating lesions in upper lobes, calcified cavity in the left apex, and tree-on bud appearance throughout left lung, suggestive of active TB. He acutely deteriorated with projectile haemoptysis, leading to haemodynamic compromise requiring tranexamic acid and embolisation of bronchial arteries.

#### Investigations:

IGRA negative. CD4 634 (44%). The  $\gamma$ -IFN axis was tested, excluding a complete defect in the IL12-signalling-pathway. Bronchial-alveolar-lavage smear and PCR negative for MTB. Serial induced-sputa however, cultured and identified *M.Kansasii*, a Non-Tuberculous-Mycobacterium (NTM) on Whole-Genome-Sequencing.

#### Management:

In absence of any radiological structural lung disease, with apparent immune-competence, the source of acquisition remains elusive. Empirical treatment included Ethambutol/Rifampicin/Isoniazid/Moxifloxacin/Clarithromycin and intravenous Amikacin for 6 weeks, to cover for reinfection/relapse with resistant-MTB, as well as NTB. Rifamycin, which is the critical component for treatment success, had to be stopped due to transminitis after 1 month. We rationalised to a multi-drug regime containing  $\geq 3$  active agents as an effective course, based on analogy of patients with rifampin-resistance. This led to normalisation of ESR and 2.2kg weight gain, plus radiological resolution 8 months into treatment. He continues to receive a minimum of twelve months after culture-conversion.

# Presenting Tuesday Evening

Poster No 087

## Once bitten, twice shy

Stuart Taylor<sup>1</sup>, Kate David<sup>2</sup>, Trupti Patel<sup>2</sup>, Shabbir Moochhala<sup>1</sup>

<sup>1</sup>Royal Free Hospital, London, United Kingdom, <sup>2</sup>Whittington Health NHS Trust, United Kingdom

### Abstract

A 48yr old man presented with a 1-2-week history of diarrhoea and fever. He took occasional ibuprofen for migraines but took no regular medications and was fit and active. On presentation to A+E blood tests revealed severe AKI with hyperkalaemia, low platelets and anaemia with raised inflammatory markers. He complained of shortness of breath with a CXR consistent with ARDS. He was commenced on IV antibiotics and was transferred to ITU for further management. While on ITU his blood film revealed evidence of haemolysis, in addition to an LDH of >2600. He had persistently low platelets (14 at its nadir), requiring platelet transfusion. His renal failure was managed with haemofiltration and he was transfused to maintain his Hb above 80. The diagnosis was of haemolytic uraemic syndrome due to a presumed infectious origin. Blood cultures came back positive for a fastidious, slow-growing Gram-negative rod, identified as *Capnocytophaga canimorsus*. Further questioning revealed the presence of a dog bite to his R. index finger two months previously. The patient's antibiotic regimen was changed to Ceftriaxone 2g IV OD and metronidazole 500mg IV TDS and he was transferred to the Royal Free Hospital to commence haemodialysis and for specialist renal management.

*Capnocytophaga canimorsus* is an encapsulated organism known for its potential to cause disseminated and fatal infection in asplenic or immunocompromised patients, which were risk factors not present in our case. It is a rare cause of HUS and highlights the need for thorough history if an infective agent is presumed.



# Presenting Wednesday Evening

Poster No 088

## A tricky trochanter

Emma McGuire, Alexander Charambous, Vivek Gulati, Aileen Boyd, Kate Woods

Homerton University Hospital NHS Foundation Trust, London, United Kingdom

### Abstract

A 24-year-old previously well female presented with a discharging thigh abscess after travel to Ghana. She reported malaise but was otherwise systemically well. Further history revealed 2 years of intermittent left thigh pain, which had been attributed to a large trochanteric bursa identified on ultrasound in 2017. On examination she was afebrile with a deep, undermined ulcer discharging pus in the left antero-lateral thigh. Femoral X-ray was unremarkable.

She underwent surgical debridement and intra-operatively infection was found to track to the greater trochanter. Tissue specimens grew *Gemella morbillorum*, *Klebsiella pneumoniae*, *Enterobacter cloacae*, *Streptococcus anginosus* and mixed anaerobes. She responded well to 4 weeks of ciprofloxacin, metronidazole and amoxicillin. Histological examination of the ulcer edge revealed non-necrotising granulomata (Ziehl-Neelsen stain negative). *Mycobacterium tuberculosis* (MTB) was subsequently isolated on mycobacterial culture from the same site. MRI demonstrated osteomyelitis of the greater trochanter with a 2cm intramedullary abscess and an adjacent soft tissue collection. Macroscopically caseous material was found on further debridement and tissue samples were AAFB smear negative but MTB complex was detected by PCR and culture of intra-medullary bone.

This case demonstrates that bacteria and mycobacteria may be co-pathogens, and that *M. tuberculosis* bone infection may present with no systemic symptoms. It is a reminder of the importance of cross-sectional imaging and mycobacterial culture in deep soft tissue infections with a long or unusual history.

# Presenting Tuesday Evening

Poster No 089

## The Unexpected Streptococcus

Ramon Casha<sup>1</sup>, Alessandro Gerada<sup>2</sup>, Jonathan Folb<sup>1</sup>, Hannah Sammut<sup>2</sup>

<sup>1</sup>Royal Liverpool & Broadgreen University hospital NHS trust, Liverpool, United Kingdom. <sup>2</sup>Royal Liverpool & Broadgreen University hospital NHS trust, Liverpool, United Kingdom

### Abstract

We report a case of *Abiotrophia defectiva* blood stream infection in a 45 year old male, renal transplant patient. *Abiotrophia defectiva* is a Gram positive coccus, classified as a nutritionally variant streptococcus secondary to its fastidious growth and culture media requirements. Further testing using the Staph aureus streak method exhibited satellitism, characteristic of this class of streptococci. This species is associated with endovascular infection with high rates of embolization and treatment failure secondary to its inherent resistance to antibiotics. Despite culturing *Abiotrophia defectiva* from four blood cultures we could not confidently prove underlying endocarditis despite repeated transoesophageal echocardiograms separated one week apart. The patient also reported the presence of a PTFE aorto-venous (AV) graft in situ and a brachiocephalic stent which was inserted 4 years ago following complications post-renal transplant insertion. This led to further investigation with FDG PET-CT to help ascertain any possible underlying source of infection. The only tracer uptake was exhibited in this patient's PTFE AV graft. This prompted surgical removal of the AV graft which did not culture *Abiotrophia defectiva*. 16S PCR detected the presence of *Staphylococcus epidermidis* but was unable to detect *Abiotrophia*. A pragmatic antibiotic regime of 4 weeks of IV Benzylpenicillin 2.4g 4 hourly was used. Gentamicin was avoided in view of his history of renal transplant. A further four week course of oral high dose Amoxicillin was prescribed. Despite this unorthodox antibiotic therapy the patient remains well two months after cessation of therapy.

# Presenting Wednesday Evening

Poster No 090

## Comedones and carbapenems: hidradenitis suppurativa in the OPAT clinic

Benedict Rogers, Karen Harman, Helena White

University Hospitals of Leicester NHS Trust, Leicester, United Kingdom

### Abstract

#### Background

Hidradenitis suppurativa (HS) is a chronic inflammatory skin disease. The UK prevalence is estimated at between 1-4%. There is an approximate 3:1 female: male preponderance and it is associated with smoking, obesity, type 2 diabetes mellitus. The pathogenesis of HS is poorly understood. Clinical features vary in extent and the axillae, inguinal and anogenital areas are typically affected. It has a significant impact on quality of life, with high rates of depression amongst sufferers.

Current UK treatment guidelines focus on lifestyle interventions, as well as targeted use of oral antibiotics, however microbiological sampling is usually not helpful. Where these are unsuccessful anti-TNF agents and surgical intervention may be indicated. Despite their absence from these guidelines, there is growing evidence to support the role of intravenous (IV) antibiotics in treating HS. It is not known whether the treatment response seen with IV antibiotics is due to their antibacterial or an anti-inflammatory effect. We present a series of HS patients managed under the OPAT team at University Hospitals of Leicester.

#### Cases

To date 8 patients have completed treatment (7F/1M). All received at least 6 weeks of therapy with IV ertapenem (+/- teicoplanin). Significant improvement in both clinical signs and symptoms was achieved in all cases. However, disease relapse was seen in three cases after cessation of IVs, requiring additional courses of treatment. Antibiotics were well tolerated with one adverse drug reaction secondary to teicoplanin.

#### Conclusion

Intravenous antibiotics are an effective adjunctive treatment in selected cases of hidradenitis suppurativa.

# Presenting Tuesday Evening

Poster No 091

## Haemophagocytic lymphohistiocytosis secondary to disseminated adenovirus infection twenty-five years post heart-lung transplant

Ramu Vathenen, Sakib Rokadiya, Jonathan Lambourne

Barts Health NHS Trust, London, United Kingdom

### Abstract

Disseminated adenovirus infection is recognised in transplant patients, often occurring early and associated with a high mortality rate. Treatment options are poorly understood and potentially toxic. Haemophagocytic lymphohistiocytosis (HLH) is a life-threatening hyper-inflammatory response.

A 75-year-old ex-banker presented following a fall, with a 2-week history of fevers, cough and high stoma output after a recent cruise. Past medical history included heart-lung transplant (25 years previously), diverticular disease and diabetes mellitus. Initially, he was febrile and tachycardic and blood tests showed an acute kidney injury (AKI), transaminitis and pancytopenia. Chest radiograph and urinalysis were unremarkable. Initial treatment was with co-amoxiclav and intravenous fluids for neutropenic sepsis. Computerised tomography of thorax and abdomen showed moderate splenomegaly with no lymphadenopathy or pneumonitis.

After 48 hours, he remained febrile with worsening renal and hepatic function. Nasopharyngeal swabs returned positive for adenovirus. Blood cultures were negative with undetectable serum cytomegalovirus (CMV) and Epstein-Barr virus (EBV) DNA.

On day 4 he developed fulminant multi-organ failure. Further investigations were suggestive of HLH. Cidofovir/Brincidofovir were discussed as potential treatments but were difficult to obtain with concern regarding toxicity. On day 6, intravenous immunoglobulins for HLH was commenced. On day 8 he died. Adenovirus was later isolated from urine, stool and serum samples.

Early diagnosis and treatment for infection in immunosuppressed patients is crucial. The 25-year interval between transplant and disseminated adenovirus infection in this case is unprecedented. Difficulty in obtaining adenovirus treatment combined with their toxicity and uncertainty of effectiveness prevented their immediate use in this patient.

# Presenting Wednesday Evening

Poster No 092

## Rifampicin Induced Addisonian Crisis In a Patient With Suspected Adrenal Tuberculosis.

Oliver Collas, Hussain Mahmood, Alistair McGregor

London North West University Healthcare, London, United Kingdom

### Abstract

A 49-year-old Indian gentleman attended A&E reporting a three-day history of fever, rigors and lower back pain. A CT KUB incidentally revealed a left adrenal mass and widespread abdominal lymphadenopathy. A subsequent CT NCAP showed lymphadenopathy above and below the hemidiaphragm with bilateral adrenal masses. A PET scan showed avidity in these locations. A right axillary lymph node biopsy revealed granulomatous lymphadenitis with focal necrosis. No microorganisms, including acid-fast bacilli were seen on staining. His Mantoux test was positive (34mm). Given his epidemiological risks factors, positive Mantoux test and evidence of necrotising granulomas on biopsy, tuberculosis was considered the most likely diagnosis, although lymphoma remained within the differential. He commenced standard first-line anti-tuberculosis treatment. One week later he re-presented reporting fever, dyspnoea, vomiting, generalised abdominal pain and increased skin pigmentation. He was tachycardic, hypotensive and hypoglycaemic (HR 129, BP 105/73, BM 3.8). Investigations showed a marked hyponatraemia, metabolic acidosis (Na<sup>+</sup> 115, pH 7.24) and deranged liver function tests (ALT 510). ACTH was raised (869 ng/L) and a short Synacthen test showed no rise in serum cortisol. His tuberculosis medication was held and he was treated for Addisonian crisis with intravenous hydrocortisone and oral fludrocortisone. It is likely that commencing rifampicin induced metabolism of endogenous steroid, thus precipitating the crisis. Potentially, he was already compensating for low endogenous steroid production prior to initiation of rifampicin, caused by adrenal tuberculosis. He subsequently improved and was discharged with oral hydrocortisone and fludrocortisone. His tuberculosis medications will be restarted as an Outpatient.

# Presenting Tuesday Evening

Poster No 093

## Extra-pulmonary TB with CNS and soft tissue involvement in a previously treated patient

Hussnain Javid, Omar Rahama, Sulman Hasnie

Bradford Royal Infirmary, Bradford, United Kingdom

### Abstract

We present a 17 year old man with past history of drug sensitive pulmonary TB for which he completed standard therapy. Eight months later, he presented with headache, photo-phobia and neck stiffness on background of fever and weight loss after returning from Pakistan where he stayed with his family. Examination only revealed an abscess on the right chest wall.

A CT-Head showed multiple cerebral lesions and a subsequent MRI was suggestive of TB granulomas. CT-TAP showed a slight loculated pericardial effusion. The CSF and pus aspirated from the chest wall abscess were both negative for AFB on microscopy but later grew fully sensitive MTB. HIV-test was negative. Given the PH and clinical suspicion, he was started empirically on standard quadruple therapy with a tapered course of dexamethasone and planned to complete 12 months of therapy. His symptoms and weight improved over the course of the 1<sup>st</sup> 2 months of therapy.

Empirical therapy of a potential TB recurrence can be quite challenging due to concerns regarding drug resistance esp in patients with severe and extensive disease e.g. with CNS involvement. In this case despite the PH, there was clear recent history of contact with drug sensitive pulmonary TB (grandmother) during his stay in Pakistan. His past treatment history didn't raise any concerns regarding compliance and we felt assured to use standard quadruple therapy to manage this presentation.

CNS TB is a serious disease and timely commencing on anti-tuberculous and steroids helps to reduce mortality from a potentially fatal illness.

# Presenting Wednesday Evening

## Final category: Diagnosis

Poster No 094

### Is the amniotic fluid really sterile? A study of Microbial Invasion of the Amniotic Cavity (MIAC) in a tertiary center, Khartoum, Sudan.

Azza Abdelrahman<sup>1</sup>, Prof. Kamal Elhaj<sup>2</sup>

<sup>1</sup>University Hospitals Birmingham, Birmingham, United Kingdom. <sup>2</sup>Soba University Hospital, Khartoum, Sudan

#### Abstract

Microbial Invasion of the Amniotic Cavity (MIAC) is a term used to describe positive amniotic fluid culture for bacteria or genital mycoplasmas. MIAC can affect both mother and fetus. It is a common cause of preterm labour with intact membranes and prelabour rupture of membranes. It is also associated with cervical insufficiency, an asymptomatic short cervix, idiopathic vaginal bleeding, placenta previa, and clinical chorioamnionitis at term. It is also related to neonatal sepsis, pneumonia and respiratory distress syndrome (RDS) and cerebral palsy. The objective of this study is to determine the etiology of Intraamniotic Infections among women delivered in Soba University Hospital, Khartoum Sudan in February- March 2016. In this cross sectional study, 246 deliveries were included samples of the amniotic fluid were taken after delivery. MIAC is detected 31.3% of the women under study. Staphylococcus aureus constitutes the major isolates (62.1%) followed by E. coli and Klebsiella spp. None of the isolates were Streptococcus agalactiae. There is a statistically significant association between MIAC and maternal infection during the third trimester, mode of delivery and birth asphyxia but not neonatal sepsis.

# Presenting Tuesday Evening

Poster No 095

## Laboratory lessons in identifying *Pasteurella bettyae*

Marco Lee, Winston Justin, William Bishop

Harrogate & District NHS Foundation Trust, Harrogate, United Kingdom

### Abstract

Introduction:

We discuss the phenotypic features of a clinically significant blood culture isolate that was ultimately identified as *Pasteurella bettyae*, with important laboratory learning points.

Laboratory diagnosis:

The blood culture from a female patient with septic shock from an unknown source grew a Gram-negative, oxidase-positive, coccobacillus that was initially identified by API® NH as *Haemophilus influenzae* (%ID=99.8; T=0.75). A respiratory source was therefore investigated for. The MALDI-TOF result, which was returned to the laboratory 4 weeks after blood culture became positive, revealed the isolate to be *Pasteurella bettyae* (score=2.305). *P. bettyae* is an unusual organism associated with gynaecological infections, such as Bartholin's abscess. Local source control, such as incision and drainage of a Bartholin's abscess, may accelerate resolution of sepsis. The laboratory misclassification of *P. bettyae* as *H. influenzae* using API® NH may lead to misidentification of the source of infection.

Learning points:

1. Correctly identifying *P. bettyae* as the cause of a Gram-negative coccobacillus bacteremia can prompt suspicion of a gynaecological source of sepsis.
2. *P. bettyae* and *H. influenzae*, as members of the same family *Pasteurellaceae*, have overlapping morphological and biochemical features that can lead to laboratory misclassification. A catalase test and x+v plates can clearly differentiate the isolates (discussed further in poster). It is recommended that laboratories perform both tests, with MALDI-TOF confirmation if possible, rather than rely solely on the result of an API® NH.



# Presenting Wednesday Evening

Poster No 096

**An audit of infective complications arising in central venous access devices (CVADs) in adult Haematology patients, Chesterfield Royal Hospital (CRH)**

Rowena Faulkner, Gregory Rouke, Sawsan Awad, Upal Kumara Dharmasena

Chesterfield Royal Hospital, Chesterfield, United Kingdom

**Abstract**

**ABSTRACT WITHDRAWN**

# Presenting Tuesday Evening

Poster No 097

## Optimising the diagnosis of UTI in patients with mixed growth bacteriuria

Tolulope Folaranmi<sup>1,2</sup>, Andrew Kirby<sup>1,2</sup>, Clare Harley<sup>2</sup>, Jim Jolly<sup>2</sup>, Jane Freeman<sup>1</sup>

<sup>1</sup>Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom. <sup>2</sup>University of Leeds, Leeds, United Kingdom

### Abstract

#### Background:

Leeds Teaching Hospitals NHS Trust (LTHT) Microbiology department report urine cultures with >1 isolate as 'mixed growth' (MG). The clinical significance of this remains controversial. We aimed to describe MG and explore how clinicians interpret MG reports.

#### Methods:

Urine culture data (2018) were retrospectively collected from the LTHT laboratory information system. Urine cultures reported as MG from a one-week period in 2019 underwent further laboratory analysis. Semi-structured interviews of eight NHS clinicians were explored for emergent themes around MG using framework analysis. Clinicians were also provided with data in existing MG report formats and alternative reports including organism identities and sensitivities; and clinician propensity to diagnose/treat urinary tract infection (UTI) was noted.

#### Results:

Of 115664 cultured specimens, 12% were MG with rates highest in patients >65yrs (19.3%, n=41760) and <1yr old (18.7%, n=2727). Of 459 isolates from 200 MG cultures, *Enterococcus* species (30.1%) and *E. coli* (27.5%) were most frequently isolated and the most frequent organism combination (24%). 65.5% of cultures contained 2 organisms, with 82.5% having at least one Enterobacteriales. Many clinicians believed MG statements represented detection of many commensal bacteria which did not represent infection. When given alternative reports including organism identities/sensitivities, (cf. report of MG only), more were likely to diagnose and treat a UTI

#### Conclusions:

MG in urines is common. Most MGs include Enterobacteriales, an important cause of UTI. Reporting two species as MG only can be misleading, resulting in failure to treat clinically apparent infections.

# Presenting Wednesday Evening

Poster No 098

## Evaluation of Xpert® Xpress Strep A Test for detection of Group A streptococcus in throat swabs

Sahar Eldirdiri<sup>1</sup>, James Omojola<sup>1</sup>, Shona MacDonald<sup>2</sup>, Ian Carmichael<sup>2</sup>, Ben Parcell<sup>1</sup>

<sup>1</sup>1. Medical Microbiology, Ninewells Hospital and Medical School, Dundee, UK, Dundee, United Kingdom. <sup>2</sup>Medical Microbiology, Ninewells Hospital and Medical School, Dundee, UK, Dundee, United Kingdom

### Abstract

#### Background

*Streptococcus pyogenes* (Group A  $\beta$ -hemolytic Streptococcus) infections in humans range from mild pharyngitis to life-threatening infections such as septicaemia and necrotizing fasciitis. We assessed the diagnostic accuracy of the Xpert® Xpress Strep A Assay, a new automated real-time polymerase chain reaction (PCR) that can detect this pathogen.

#### Methods

We evaluated the diagnostic accuracy (sensitivity, specificity PPV and NPV) of Xpert® Xpress Strep A Test (Cepheid, Maurens-Scopont, France) for the detection of Group A Streptococcus in throat swabs using Copan virus transport medium at Ninewells Hospital & Medical School (Dundee, Scotland, UK). The performance of Xpert t® Xpress Strep A Assay was compared with routine culture (gold standard method).

#### Results

A total of 323 clinical throat swab samples were tested. The sensitivity of Xpert® Xpress Strep A Assay was found to be 95% (95% CI, 75.13% -99.87); specificity 96.5% (95% CI 93.83% -98.36%); PPV 65.5% (95% CI 50.61% -77.89%); and NPV 99%(95% CI 97.68% -99.95%). Overall, there were eleven discrepant results, of these 10 were positive by PCR and not confirmed by culture and one sample was recorded positive by culture and negative by PCR. The turnaround time (TAT) was 24 minutes for negative samples and 18 minutes for positive samples.

#### Conclusion

The Xpert® Xpress Strep A Assay for detection of *Streptococcus pyogenes* in throat swabs had high sensitivity, specificity and rapid TAT. Use of this technology as a point-of-care test could be explored further to assess its impact on antimicrobial prescribing and infection prevention and control measures.

# Presenting Tuesday Evening

Poster No 099

## Metabolite X is a novel biomarker for sepsis diagnosis and treatment

Susan Fitzpatrick<sup>1</sup>, Simon Lambden<sup>1</sup>, David Macias<sup>1</sup>, Zudin Puthuchear<sup>2</sup>, Sandra Pietsch<sup>1</sup>, Lee Mendil<sup>1</sup>, Mark McPhil<sup>2</sup>, Randall Johnson<sup>1</sup>

<sup>1</sup>University of Cambridge, Cambridge, United Kingdom. <sup>2</sup>Kings College, London, United Kingdom

### Abstract

Background:

Sepsis develops when the initial, appropriate host response to an infection becomes amplified and subsequently dysregulated. Recent research has shown that the pathogenesis of sepsis can only partially be explained by an aberrant inflammatory response, metabolic deregulation also plays a vital role. Here we have investigated the role of a novel metabolite in sepsis pathophysiology.

Methods:

Urine was obtained from an LPS mouse model of sepsis and human septic patients. A colorimetric assay and mass-spectroscopy were performed to determine the expression levels of metabolite X (mX). Furthermore, mice were implanted with radiotelemetry probes and the effect of supplementation with mX on clinical symptomology was determined. Following co-administration of LPS and mX real-time measurements of temperature, heart-rate and blood pressure were obtained.

Results:

The urinary excretion of mX is significantly reduced in both a mouse model of LPS-induced sepsis, and in samples taken from human septic patients. Subsequent data showed that this is due to enhanced activation of the enzyme responsible for mX degradation. Moreover, co-administration of LPS and mX in mice modulates a number of aspects of physiological responses to sepsis, and in particular, protects against sepsis-induced hypothermia. The mechanism underlying this protective effect is due to suppressed nitric-oxide signalling.

Conclusion:

Our results identify a novel role for mX in sepsis pathophysiology and suggest that this metabolite is a critical diagnostic and therapeutic target for sepsis. Future studies will fully elucidate the mechanisms underlying our observations.

mX not disclosed due to IP application but will be disclosed for presentation.

# Presenting Wednesday Evening

## Poster No 100

### **A qualitative study on factors influencing the implementation of a *Clostridium difficile* risk prediction tool in the Scottish secondary care setting**

Ansu Joseph A.<sup>1</sup>, Amanj Kurdi<sup>1</sup>, Marion Bennie<sup>1,2</sup>

<sup>1</sup>University of Strathclyde, Glasgow, United Kingdom. <sup>2</sup>Public Health and Intelligence Strategic Business Unit, NHS National Services Scotland, Edinburgh, United Kingdom

#### **Abstract**

**Introduction:** *Clostridium difficile* is the leading cause of hospital-acquired diarrhoea, driven mainly by the consumption of 4C antibiotics (co-amoxiclav, clindamycin, cephalosporins and ciprofloxacin). In order to support secondary care clinicians in prescribing antibiotics, an algorithm helping to identify patients at high risk of contracting *Clostridium difficile* infections (CDI) has been created. The aim of this study was to identify factors that are influencing the implementation of a risk predictive tool in secondary care, focusing on podiatrist as potential users.

**Methods:** Four podiatrists from NHS Fife were interviewed to gather their perception of CDI, the antibiotic prescription process, and the usefulness of a CDI tool in supporting their antibiotic prescribing decisions. The interviews were thematically analysed in NVivo using the consolidated framework for implementation research.

**Result:** A facilitator emerged during the interviews suggested that, although podiatrists tend to not prescribe 4C antibiotics, they comprehend the risks involved with CDI. Therefore, for patient's safety netting purposes, the use of the CDI tool during consultations was considered useful. However, a barrier emerged suggested that, although implementing the tool into their electronic system was deemed favourable, this isn't feasible, due to patient data in secondary care being allocated in different systems. Therefore, standalone app or website platforms were perceived as more appropriate to develop the CDI tool.

**Conclusion:** In general it was understood that podiatrists are supportive in having a CDI tool, however, due to the impossibility of implementation of the tool into their system, a website or app will be developed.

# Presenting Tuesday Evening

## Poster No 101

### It's not the tool you use. It's how you use it.

Molly Flint<sup>1,2</sup>, David Hettle<sup>1,2</sup>, Fergus Hamilton<sup>1,2</sup>

<sup>1</sup>University of Bristol, Bristol, United Kingdom. <sup>2</sup>North Bristol NHS Trust, Bristol, United Kingdom

#### Abstract

##### Background

Worldwide, several clinical screening tools (including EWS, SOFA, qSOFA, SIRS and CURB65) are used on admission to identify patients at risk of sepsis-related mortality. However their ability to accurately predict mortality remains controversial. The purpose of this study was to evaluate whether the predictive performance of these tools is affected by the timing of their use.

##### Methods

A systematic literature search was performed using PubMed, identifying studies in adult patients with a suspected admission diagnosis of infection, sepsis or pneumonia, in which screening tools were used to predict mortality. Meta-regression analysis was performed on included studies to identify factors affecting the tool's ability to predict mortality, with a focus on score timing.

##### Results

From 3901 abstracts screened, 49 studies met inclusion criteria, comprising 421,006 patients and 13 clinical screening tools. No significant difference was found between any predictive tool and mortality. Of all variables considered (size of study, setting, diagnostic group, timing), only the timing related to admission affected predictive value of the tool. Studies that reported using purely physiological measures were less sensitive, marginally more specific, but had generally poorer predictive ability than those which included additional biochemical measures.

##### Conclusion

Clinicians must recognise that the performance of clinical screening tools is largely related to when they are used, not the individual tool. Given such tools are used on admission to identify risk of sepsis-related mortality, future studies must consider admission scores rather than those further into patients' admission, to avoid over-reporting any tool's predictive ability.

# Presenting Wednesday Evening

## Poster No 102

### The management of adult patients with meningitis at Arrowe Park Hospital – A complete audit cycle.

Elshadai Ejere, David Harvey

Arrowe Park Hospital, Wirral, United Kingdom

#### Abstract

##### Background:

Anecdotal experience suggested there were areas for improvement in meningitis management. To address this, we conducted a complete audit cycle of the management of meningitis in adult patients at Arrowe Park Hospital.

##### Method:

We utilised the abbreviated audit tool from the McGill et al 2016 meningitis guidelines.

Time period: 1/1/2017 to 31/12/2017. Cases audited: 20

A series of interventions were made.

Time period for second cycle: 1/2/2019 to 31/5/2019. Cases audited: 6

##### Results:

Audit standards were met for 1 out of 14 criteria for the first cycle and 2 out of 14 criteria for the second cycle. Of note, there was reasonable compliance with empiric choice of antibiotic (80% à 83%), definitive choice of antimicrobials (95% à 83%) and duration of antimicrobials (84% à 100%).

Improvements in investigations were seen in the second cycle:

1. Pneumococcal and Meningococcal EDTA PCR was sent (15% à 67%)
2. CSF glucose with concurrent plasma glucose sent (6.3% à 67%)
3. CSF for pneumococci and meningococci sent in all cases of suspected bacterial meningitis (22% à 67%)

The re-audit identified no improvement in the following areas:

1. Blood cultures taken within 1 h of arrival at hospital (30% à 33%)
2. LP performed within 1 h of arrival at hospital provided that it is safe to do so (0% à 0%)
3. Antibiotics started within 1 hr of arrival in hospital (35% à 33%)

In both audit cycles, 0% of patients were made aware of voluntary sector support.

##### Conclusion:

Whilst improvements were achieved, there remains considerable scope for further improvement.

# Presenting Tuesday Evening

Poster No 103

## Outcomes of *Staphylococcus aureus* bacteraemia attributed to blood culture contamination

Paul Robertson

University Hospital Crosshouse, Kilmarnock, United Kingdom

### Abstract

*Staphylococcus aureus* is a common skin commensal and leading cause of bloodstream infection. Given the formidable mortality and morbidity associated with *S. aureus* bacteraemia (SAB), it is uncertain whether *S. aureus* can be viewed safely as a blood culture contaminant.

19 episodes of SAB over two years were identified that were prospectively attributed as contaminants using Health Protection Scotland criteria and compared these with 168 cases of genuine SAB. All cases were assessed by an infection specialist and underwent multidisciplinary review to agree the source. Follow-up was a minimum of six months.

Female sex, cognitive impairment and chronic skin conditions were more common in the contaminant group. No single clinical or laboratory feature reliably predicted contamination. No patients in the contaminant group subsequently developed a SAB or metastatic complications associated with SAB. Eighteen patients (95%) survived to hospital discharge. Compared to patients with genuine SAB surviving to discharge, the contaminant group had a shorter duration of hospital stay (median 14 days versus 19.5 days), a briefer exposure to intravenous antibiotics (median 1 day versus 14 days) and received less total antibiotic (median 7 days versus 19 days). Twelve patients received at least five days of antibiotics active against their SAB, though none would have been deemed appropriate SAB treatment under current guidelines.

The careful attribution of SAB as a contaminant by an infection specialist, combined with appropriate follow-up, is associated with favourable clinical outcomes, shorter hospital stay and reduced antibiotic use. A more robust definition of genuine SAB is needed.



# Presenting Wednesday Evening

## Poster No 104

### Early laboratory markers may reflect the severity of pyogenic liver abscess infection: Retrospective cohort study

Ahmed Husain, MAHMOUD MOHD, Eman Elmekaty, Abdalrazig El Mulla, Mohammad Adam, Abdullatif Al-Khal, Muna Al Maslamani

Hamad Medical Corporation, Doha, Qatar

#### Abstract

##### Background:

Liver abscess carries significant morbidity and mortality rate due to its complications. We aimed to identify laboratory markers associated with septic shock related to pyogenic liver abscess.

##### Methods:

The study was conducted at Hamad General Hospital, a tertiary hospital in Qatar. Data were collected retrospectively. All patients diagnosed with pyogenic liver abscess between 2013 and 2017 were included. Liver abscess was diagnosed based on clinical presentation and radiological finding with or without microbiological evidence. Septic shock defined as the need of vasopressors to maintain mean arterial pressure > 60 mmHg. Data has been collected on admission time. Descriptive data were presented in mean  $\pm$  SD and percentages. Normally distributed data were analyzed by T-test otherwise *Mann-Whitney was used*. Fisher Exact test was used for categorical data. The level of significance was set at  $P < 0.05$ .

##### Results:

Pyogenic liver abscess has been identified in 78 patients. 89.9% were males. 48.7% of the patients were diabetic. Nine patients (11.5%) developed septic shock. Patients who developed septic shock had higher procalcitonin level (Hazard ratio [HR] 1.025, 95% CI 1.006-1.044,  $p$  0.009) but lower level of hemoglobin (HR 0.744, 95% CI 0.581-0.952,  $P$ . 0.019), *protein* (HR 0.867, 95% CI 0.779-0.966,  $p$  0.009) and platelet (HR 0.994, 95% CI 0.988-1.000,  $p$  0.035)

##### Conclusion:

Measurement of baseline procalcitonin, hemoglobin, protein, and platelet in pyogenic liver abscess may provide early information about the severity of the infection and the need for early aggressive management. However, a larger sample size is needed to achieve more statistical significance.

# Presenting Tuesday Evening

## Poster No 105

### An audit of the diagnosis and treatment of infective endocarditis

Katie Roth, Sam Ross, Sawsan Awad

Chesterfield Royal Hospital, Chesterfield, United Kingdom

#### Abstract

##### Background

Infective endocarditis (IE) is associated with a high incidence of mortality and morbidity and guidelines exist on appropriate diagnosis and treatment. The aim of the study was to evaluate adherence with national guidance and identify relevant learning experiences if indicated.

##### Methods

We performed a retrospective review of admissions to a district general hospital with a diagnosis of IE over a 1-year period from January 2018 to December 2018. Individual cases were identified during inpatient admission and notes reviewed to establish adherence to a published national audit tool.

Information regarding initial investigation, and management was gathered from the medical notes and microbiology reporting of samples was also examined.

##### Results

Of the 16 cases identified: 93% did not have blood cultures taken appropriately before treatment was started and only 50% received the recommended empirical antibiotics.

Only 43% had a transthoracic echocardiogram performed in the first 24 hours.

A surgical opinion was sought in just 2 of 4 cases of prosthetic valve endocarditis.

The three culture negative IE cases had no further recommended testing performed.

##### Conclusion

We highlighted a need for improved investigation and treatment of IE.

Timeliness of transthoracic echocardiograms will be improved by a change to the request form to indicate if IE is suspected so scans can be prioritised.

Clinicians will be informed if blood cultures are negative so further testing can be arranged if there is still a high clinical suspicion.

A weekly microbiology ward round has been established to review all suspected cases of IE.

# Presenting Wednesday Evening

## Poster No 106

### Knowledge of nursing staff and healthcare assistants on the diagnosis of urinary tract infections in patients with urinary catheters

Ellen Mekonnen, Priya Khanna, Gopal Rao

Northwick Park Hospital, London, United Kingdom

#### Abstract

##### Background

Asymptomatic bacteriuria is common in patients with urinary catheters. Current clinical guidelines advise against dipstick testing or treating urine culture results in asymptomatic catheterised patients which can promote the development of antimicrobial resistance and present an unnecessary risk to patients. This study aimed to assess the knowledge of nurses and healthcare assistants (HCAs) on the diagnosis of urinary tract infections (UTIs) in patients with urinary catheters.

##### Methods

This study employed a cross sectional survey of opportunistically sampled nursing staff and healthcare assistants working at Northwick Park Hospital in May 2018. Results were analysed descriptively.

##### Results

134 participants were included in the final analysis of whom 90% (N=120) were nurses and 10% (N=14) were HCAs. The majority of staff (38.6%, N=51) worked in a medical speciality and had over 15 years of work experience (45.3%, N=58). 79 participants (66%) believed that a positive dipstick result was diagnostic of a catheter associated urinary tract infection (CAUTI). A positive dipstick result was the most frequently selected indication (91% of respondents, N=108) for sending urine for culture in a catheterised patient, and was also the most frequently selected reason for sending urine for culture across staff of all years of experience and all specialities.

##### Conclusion

There is a need to improve the level of knowledge of nursing and HCA staff on the diagnosis of CAUTIs including misconceptions on the diagnostic value of dipstick testing in catheterised patients. The findings of this research will inform a quality improvement project to address these gaps in knowledge.

# Presenting Tuesday Evening

**Poster No 107**

## **Audit of compliance to SEPSIS 6 criteria in Emergency Department admissions**

Lara Silva de Carvalho, Anand Sivaramakrishnan, Binutha Bharathan, Kirta Patel

Barnet Hospital, London, United Kingdom

### **Abstract**

#### **INTRODUCTION**

The timely diagnosis of sepsis is the essential first step that activates life-saving pathways. The aim of our study was to assess the accuracy of the 'sepsis flag' assigned to patients presenting to our hospital's Emergency Department (ED).

#### **METHOD**

A retrospective two week review (18/03/19 to 25/03/19 and 07/05/19 to 14/05/19) was performed in a District General Hospital in London, assessing the medical records of all adult patients assigned a sepsis flag in ED (n=21), in order to assess if SEPSIS 6 criteria were met. For comparison, patients admitted to ED with gram negative bacteraemias (n=8) in the same period were reviewed to check if they were included in the SEPSIS 6 group.

#### **RESULTS**

Ten out of twenty one patients with a 'sepsis flag' fulfilled criteria. Six other patients had one criterion ( $T > 38^{\circ}\text{C}$ ) for sepsis. Blood cultures were sent in all patients. Four out of ten patients were administered IV antibiotics within one hour. During this period, none of the eight patients admitted with gram negative bacteraemias were assigned a 'sepsis flag', despite five of them meeting SEPSIS 6 criteria (two or more criteria) and having evidence of infection. However, the majority (7/8) received IV antibiotics within one hour.

#### **CONCLUSION**

Our review highlights the difficulties in the diagnosis of sepsis and the limitations of the SEPSIS 6 criteria for detection of septic patients in triage. However, we have demonstrated that the vast majority of patients had appropriate investigations and prompt antibiotic treatment, irrespective of the 'sepsis flag'.

# Presenting Wednesday Evening

## Poster No 108

### ***S. bovis* urinary tract infection, management and associations.**

Aleksandra Marek, Mairi Macleod

Glasgow Royal Infirmary, Glasgow, United Kingdom

#### **Abstract**

##### **Background**

As part of a move to improve antimicrobial stewardship NHS GGC recently implemented identification to species level and Vitek 2 sensitivity testing on all urinary isolates. As part of this we have noticed an increased number of isolates of the *Streptococcus bovis* group in urinary samples. It is possible that these were previously labelled as *Enterococcus spp.* The significance of *S. bovis* isolates in urinary tract is uncertain.

##### **Methods**

We reviewed a year of *S. bovis* urinary isolates to ascertain whether there is any association with GI malignancy or endocarditis as is recognised with blood culture isolates of this group.

##### **Results**

54 isolates were reviewed dating between Feb 2018 and 2019 allowing at least 6 months follow up. 94% of cases were in females. 46% of isolates were mixed usually with a member of the Enterobacterales. There were no cases of either known or newly diagnosed endocarditis amongst this patient cohort. 9% of cases had a known GI malignancy.

##### **Conclusion**

9% of our urinary isolates of *S. bovis* were associated with a known GI malignancy. This is compared with 11% of blood culture isolates also from our unit in 2016.

# Presenting Tuesday Evening

## Poster No 109

### Spontaneous Bacterial Peritonitis at University Hospitals of North Midlands NHS Trust: A Retrospective Study

Ahmed Ziada<sup>1</sup>, Alireza Behzadnia<sup>1</sup>, Junaid Khalid<sup>2</sup>, Seema Desai<sup>1</sup>

<sup>1</sup>University Hospitals of North Midlands NHS Trust, Stoke-On-Trent, United Kingdom. <sup>2</sup>Hull Royal Infirmary, Hull, United Kingdom

#### Abstract

##### Background

Spontaneous bacterial peritonitis is an acute infection of ascitic fluid that is not related to an underlying intra-abdominal pathology.

##### Methods

This is a retrospective study of data on ascitic fluid samples taken during the period of January to December 2017 to assess the management of SBP patients and associated mortality. Kaplan-Meier method was used to estimate survival probability at 30 and 90 days. Cox proportional models were used to evaluate aetiology and causative organism in predicting mortality. Analyses were done using R: A language and environment for statistical computing.

##### Results

Total of 53 patients were identified as having SBP based on ascitic fluid cultures. Sixteen of these also fulfilled the national criteria of ascitic neutrophil count of more than 250 or total cell count of more than 500. Thirty-three (62.8%) samples grew pathogenic organisms. The most common pathogenic organisms were E coli (30.3%) followed by Enterococcus (21.2%) – in which four were ESBL tagged – Klebsiella (6%) and Staph Aureus (6%). In majority of the patients, the underlying aetiology of ascites was secondary to ALD (68.9%), Malignancy (11.8%) and NASH cirrhosis (11.8%). In this cohort, the overall 30-day survival was 64.2% and 90-day survival was 43.4%. About half mortality occurred during the same admission to hospital.

##### Conclusion

E coli was the most commonly isolated organism. Alcoholic Liver Disease was the most common underlying aetiology in SBP patients. SBP is associated with a high 30-day and 90-day mortality. Isolation of pathogenic organisms was associated with a four-fold higher mortality than non-pathogenic organisms.

# Presenting Wednesday Evening

## Poster No 110

### Managing seasonal influenza in hospitalized patients - without an influenza point-of-care test

George Hills<sup>1</sup>, Matthew Kennedy<sup>1</sup>, Osama Ahmed<sup>2</sup>, Julian Tang<sup>1,3</sup>

<sup>1</sup>Leicester Royal Infirmary, Leicester, United Kingdom. <sup>2</sup>Leicester Royal Infirmary, Leicester, United Kingdom. <sup>3</sup>University of Leicester, Leicester, United Kingdom

#### Abstract

##### Background:

National guidelines recommend isolation and commencing empirical antiviral therapy for suspected influenza in the inpatient setting, however this is not always done in practice. There are many reasons why influenza may be diagnosed late, and in order to minimise potential harm, rapid results are therefore required.

##### Methods:

During the 2018-19 influenza season, we instigated a policy of calling out all new influenza positives during normal working hours. As well as informing clinical teams of results, we also recorded clinical information, including whether the patient was:

- isolated,
- already on antivirals,
- discharged (and if so on what therapy)

##### Results:

In the peak season (January 1st - March 31st 2019), 179 calls to clinical teams were made. The median time from sample collection to reporting was 28 hours and 33 minutes. 44% of patients were not on antivirals at the time of the result, and 28% were not isolated. Based on these numbers, we estimated that 141-235 inpatients may have been exposed to influenza on our wards. 25% of a total of 309 positive influenza samples were from patients who were discharged at the time of the result. 65% of these patients were discharged with antibiotics, 54% with antivirals, and 37% with both antivirals and antibiotics.

##### Conclusion:

Based on our data, and that of other studies, we hypothesise that rapid influenza results would lead to better infection control practices, reduced spread of infection, and improved antimicrobial stewardship. Molecular point-of-care tests have the potential to resolve some of the issues with late influenza diagnosis.

# Presenting Tuesday Evening

## Poster No 111

### **A retrospective audit of microbiological sampling for spondylodiscitis at the Royal Devon and Exeter Hospital (RD&E)**

Matthew Powell, Marina Morgan

Royal Devon and Exeter NHS Foundation Trust, Exeter, United Kingdom

#### **Abstract**

##### **Introduction**

Spondylodiscitis is an increasingly diagnosed condition with significant morbidity and mortality. A key aspect of management is a protracted course of targeted antimicrobial therapy, ideally tailored to the organisms isolated from appropriate microbiological specimens in accordance with Infectious Diseases Society of America (IDSA) guidelines (2015). When consulted regarding possible discitis, we routinely recommend blood cultures and disc biopsy, particularly if blood cultures are negative.

##### **Method**

We undertook a retrospective audit of patients presenting over 6 years with a radiological diagnosis of discitis with the primary objective of determining the proportion of patients who had appropriate microbiological investigation either via blood culture or biopsy.

##### **Results**

42 patients met the inclusion criteria. Blood cultures were positive with organisms likely to be the causative agent in 50% of patients. Of the 50% of patients with negative blood cultures, 57% went on to have a successful spinal biopsy. Biopsies proved positive in 75% of cases. 8 patients with negative blood cultures did not progress to biopsy at the time of diagnosis and four suffered some degree of harm. One of these patients failed empirical anti-staphylococcal therapy and later required spinal stabilization due to destruction of the spinal disc was proven to have pseudomonas infection at the time of the corrective surgery.

##### **Conclusion**

19% of patients with discitis did not have appropriate disc sampling prior to commencement of antibiotic therapy. 50% of these suffered some degree of harm. This strengthens the case for recommending appropriate sampling prior to initiation of therapy, unless absolutely contraindicated.



# Presenting Wednesday Evening

## Poster No 112

### Evaluation of Hospital Treatment Outcomes for Bronchiectasis

Mai Baalbaki<sup>1</sup>, Seema Desai<sup>2</sup>

<sup>1</sup>Keele University, Stoke-on-Trent, United Kingdom. <sup>2</sup>University Hospital North Midlands, Stoke-on-Trent, United Kingdom

#### Abstract

##### Objectives:

Bronchiectasis, a chronic respiratory condition, presents with repeated exacerbations. Patients usually experience multiple hospital admissions. Hospital care is multidisciplinary and holistic, compared to outpatient care. We postulate the holistic nature of bronchiectasis hospital care can serve as a community model, reducing demand on care services. This study elucidated the benefit of holistic multidisciplinary hospital care by examining outcomes regarding readmission rates and overall care structures.

##### Methodology:

Care outcomes of 415 bronchiectasis patients admitted to University Hospital of North Midlands, 2015 – 2017, were analyzed. In this retrospective study, we identified 69 patients with repeat admissions for infective exacerbation of bronchiectasis. Patient data was surveyed across admissions, tracking diagnosis, treatment, and management, to assess outcomes and quality of care, and analyzed using Microsoft Excel®.

##### Results:

Twenty-five patients (36%) died over the study period. Survivors were mostly readmitted within 30 (29%) or 60 days (20%), with a strong decrease at 90 days (8%). Most patients were readmitted once (41%). Only 52% of patients had sputum collected within 30 days of admission before antibiotics were prescribed; 24% had no sputum obtained throughout admission. *Pseudomonas* was the most prevalent organism in patients' sputum, with marked resistance to ciprofloxacin (38%).

##### Conclusion:

The high proportion of patients with no sputum collected before antibiotic prescription is concerning and should be targeted for service improvement. Studies should assess whether different approaches to bronchiectasis management, such as outpatient specialist clinics providing holistic care, with rigorous physiotherapy support at home, could relieve the readmission burden and improve quality of care.

# Presenting Tuesday Evening

## Final category: Education and training

### Poster No 113

#### Do junior doctors have the knowledge to safely prescribe antibiotics in the context of known penicillin allergy?

Laura Cheetham

Aneurin Bevan University Health Board, Newport, United Kingdom

#### Abstract

The drug class most frequently associated with allergic reactions are the penicillins. Yet penicillins have a vital role in being important treatment options for many common and uncommon infections.

Junior doctors undertake the majority of hospital-based prescribing. Evidence suggests foundation doctors make the most prescribing-based errors.

A questionnaire was designed to ascertain whether junior doctors displayed an adequate level of knowledge regarding individual and antibiotic class identification, use of trade names, beta lactam cross sensitivity and symptoms of type I and IV hypersensitivity reactions.

Three quarters of respondents stated they had received allergy/non-allergic drug reaction teaching as an undergraduate but only just over a half had as a postgraduate. The Junior doctor responded group demonstrated adequate knowledge of correct identification of individual penicillins and non-penicillins and symptoms of a type I hypersensitivity reaction. There was inadequate knowledge of cephalosporin and carbapenem prescribing in the context of penicillin-associated anaphylaxis and of type IV hypersensitivity reaction symptoms. More core and higher specialty trainees correctly chose to prescribe in generic name form than foundation doctors.

This survey suggests that there may be key elements of knowledge required to safely prescribe antibiotics in the context of penicillin that, overall, as a group, junior doctors may lack adequate knowledge of, with this inadequacy being most pronounced in foundation doctors.

This suggests that junior doctors, and foundation trainees in particular, may need more education and training early in their careers to help support safe prescribing in the context of penicillin allergies.

# Presenting Wednesday Evening

## Poster No 114

### **National Audit of Meningitis Management (NAMM): a National Infection Trainee Collaborative for Audit and Research (NITCAR) audit of adherence to the 2016 UK joint specialist societies' guideline on the diagnosis and management of acute meningitis in adults.**

Fiona McGill<sup>1</sup>, Jayne Ellis<sup>2</sup>, David Harvey<sup>3</sup>, Sylviane Defres<sup>1,4</sup>, Eloisa MacLachlan<sup>5</sup>, Tom Solomon<sup>1,6</sup>, Arjun Chandna<sup>7</sup>, Robert Heyderman<sup>8</sup>, on behalf of the NAMM investigators.<sup>9</sup>

<sup>1</sup>Institute of Infection and Global Health, University of Liverpool, Liverpool, United Kingdom. <sup>2</sup>University College London Hospitals NHS Foundation Trust, London, United Kingdom. <sup>3</sup>Wirral University NHS Foundation Trust, Wirral, United Kingdom. <sup>4</sup>Royal Liverpool and Broadgreen University NHS Trust, Liverpool, United Kingdom. <sup>5</sup>Bradford Teaching Hospitals NHS Trust, Bradford, United Kingdom. <sup>6</sup>The Walton Centre NHS Foundation Trust, Liverpool, United Kingdom. <sup>7</sup>London School of Tropical Medicine and Hygiene, London, United Kingdom. <sup>8</sup>Division of Infection & Immunity, University College London, London, United Kingdom. <sup>9</sup>National Infection Trainee Collaborative for Audit and Research, ., United Kingdom

## **Abstract**

### Background

Bacterial meningitis has significant mortality but frontline doctors will see it infrequently. Therefore, UK guidance on meningitis in adults, with auditable standards, was revised in 2016. We undertook a national audit to assess adherence to the guidelines.

### Methods

Patients with community acquired meningitis were identified through coding or laboratory data. Audit standards, including immediate management, diagnostics and treatment, were evaluated by notes review.

### Results

Notes from 1472 patients with meningitis were reviewed – 309/1472 (21%) had bacterial aetiology, 615/1472 (42%) viral, 548/1472 (37%) unidentified aetiology. Only 50% of patients had blood cultures taken within one hour of admission and just 2% had a lumbar puncture (LP) within the first hour. 27% received antibiotics within one hour. Most patients received ceftriaxone or cefotaxime but only 37% of over-60s received empirical anti-listeria antibiotics. 26% of patients who had antibiotics were given adjunctive steroids. Half had CSF microscopy within two hours of LP. Less than a third had pneumococcal and/or meningococcal PCR on cerebrospinal fluid. Only 44% had an HIV test. 62% had unnecessary neuroimaging before LP. Overall mortality was 3% - 16% in pneumococcal disease and 8% in meningococcal meningitis. There was a trend toward improved survival in patients with pneumococcal meningitis who received dexamethasone [85/96 (88%)] compared to those who did not [57/73 (78%)] (p=0.066).

### Conclusions

Adherence to the meningitis guidelines is inadequate, potentially compromising patient safety. Improvements in guideline dissemination, novel educational resources and clinician and patient engagement are required if we are to increase guideline adherence and improve outcome.

# Presenting Tuesday Evening

## Poster No 115

### Tayside TB Pathway: A Quality Improvement Project

Aline Wilson, Rose Jordan

NHS Tayside, Dundee, United Kingdom

#### Abstract

##### Aims:

The aim of this project was to look at our local practice of identifying and managing patients with *mycobacterium tuberculosis* (MTB) and non pulmonary NTM. In Tayside, the care of patients with MTB is shared between the Infectious Diseases physicians and the Respiratory physicians. We aim to improve communication and identify any issues with continuity of care and create solutions to standardise the care our patients receive.

##### Methods:

We performed an initial audit of patients that were currently receiving or had recently completed treatment for MTB and non pulmonary NTM. We collected data from 26 patients between January 2017 - July 2018.

##### Results:

Some of the results are as follows: Out of the 26 patients, only 14 (53.8%) of those had a documented start date of treatment on the initial clinic letter. 92.3% had a documented treatment regime on clinic letter. 88.4% (23 out of 26 patients) had a documented diagnosis (specifying site) on clinic letter. Only 46% had a complete BBV screen, 35% had an incomplete BBV screen and 19% had none.

##### Outcome:

After performing the initial audit and assessing the areas of improvement, we were able to create our "Tayside TB Pathway". The idea behind this was to create a more cohesive and streamlined approach to TB care whilst involving all members of the MDT. The pathway was created to be straightforward and allow us to have a "centralised hub" to oversee the important steps involved in the management and prompt these to be performed where needed.

# Presenting Wednesday Evening

Poster No 116

## Knowledge, Attitude, Practice and Implementation of community pharmacists role in treating tuberculosis patients in south India Region

Madiwalayya Shivakantayya Ganachari<sup>1,2</sup>, Uday Kumar Rangaswamy<sup>1,2</sup>

<sup>1</sup>KLE Academy of Higher education and Research, Belagavi, India. <sup>2</sup>KLE College of Pharmacy, Belagavi, India

### Abstract

#### Background:

Knowledge, attitude, practice and implementation of community pharmacist role in treating tuberculosis patients. Community Pharmacy education in India faces many challenges. An assessment of the challenges and opportunities of community pharmacist role in eradication of Tuberculosis in India has not been conducted.

#### Methods:

This was a cross sectional study A one-day training was conducted in 6<sup>th</sup> May 2019 in Belagavi, Karnataka state, India. A selected sample of stake holders was invited experts Like Medical education expert in the field of tuberculosis, District Tuberculosis controller officer, Deputy Drugs controller, Assistant Drugs controller. The training Program was conducted by Dept. of Pharmacy Practice, KLE college of Pharmacy, Belagavi in association with District Tuberculosis center Belagavi and Regional office of Deputy Drugs Controller, Belagavi, India.

#### Results:

A total of 60 community pharmacists are responded. The lowest number of correct answers were to the questions were Patients with active TB disease can infect people by talking (56.7%), TB is often spread from person to person through sex (53.3%), aware of Public Private mix (PPM) for Tuberculosis control and care (35%), Anti-TB drugs which are contraindicated in pregnancy (35%).

#### Conclusion:

There are significant gap in knowledge, Attitude and practice on TB infection and control among community pharmacist. Proper training is essential to overcome the gap between community pharmacist and Government sector to eradicate TB by 2025 from India.

# Presenting Tuesday Evening

## Poster No 117

### Online continuous medical education: Diagnosing fungal infections from a distance.

Dora E Corzo-leon<sup>1</sup>, Norma E Rivera-Martinez<sup>2</sup>

<sup>1</sup>University of Aberdeen, Aberdeen, United Kingdom. <sup>2</sup>Hospital Regional de Alta Especialidad de Oaxaca, Oaxaca, Mexico

#### Abstract

##### Background

Increasing global incidence of serious fungal infections (SFI) requires increasing access to high quality medical mycology education to improve their identification and decrease associated mortality.

##### Methods

An online course was developed by two infectious diseases (ID) specialists. The course aimed to improve diagnosis of SFI and was delivered from April-June 2019. The course consisted of 9 online interactive sessions every week. Sessions were streamed by a hospital in Mexico and local participants gather there every week. Other participants connected independently online. Participants took one exam at the start and another after the course was completed. Feedback was collected during the course. A final evaluation of the impact on diagnosis will be collected in October 2019.

##### Results

A total of 137 people registered for the course. Registrants were from four different countries, Mexico (126, 92%), Ecuador (9, 6.6%), Australia (1, 0.7%) and Bolivia (1, 0.7%). Mexican participants connected from 15 of the 32 regions (47%) in Mexico and 45 (33%) attended the course at host hospital. Most participants were physicians (76%), 54 were ID specialists and 19 were ID residents. Sixty participants (60/137, 44%) completed the course, with greater completion by those attending in person (33/45, 73%) compared with online attendance (27/92, 29%). The exams results improved 30% after the course. Clinical urgent calls limited attendance.

##### Conclusions

This online course allowed a broad geographical participation. Learning as group lead to better completion rates. Recorded sessions will be available on demand and may allow the completion of the course.

# Presenting Wednesday Evening

## Poster No 118

### Learning to prescribe antimicrobials in Northern Ireland

Cara McKeating<sup>1</sup>, Ciaran O'Gorman<sup>1,2</sup>

<sup>1</sup>Queen's University Belfast, Belfast, United Kingdom. <sup>2</sup>South Eastern Health and Social Care Trust, Belfast, United Kingdom

#### Abstract

**Background:** The appropriate use of antimicrobials has implications on individual patient care, drug resistance and worldwide public health. Learning to prescribe antimicrobials is therefore an important part of medical education. The aim of this study was to evaluate novice prescribers' readiness to use antimicrobials, in order to design valid educational activities.

**Methods:** A mixed methods study was carried out amongst final year students at Queen's University Belfast and foundation year 1 (FY1) doctors working in a Northern Ireland hospital. Data was initially collected using a survey, comprised of quantitative and qualitative elements. This was supplemented by semi-structured interviews.

**Results:** One hundred and fifty-eight students and eighteen doctors participated in the survey. Two students and two doctors were interviewed. Both groups appeared to feel only moderately prepared to prescribe antimicrobials. Agreement with survey statements relating to knowledge and confidence was 61% and 73% for students and FY1 doctors respectively. More focused contextual teaching and practical learning opportunities were felt to be required. Students perceived a long time gap between teaching and clinical exposure. Both groups conveyed the strong influence of the working environment and local prescribing culture. These were sometimes seen as barriers to optimal prescribing. Feedback on prescribing was felt to be useful but lacking.

**Conclusion:** This study suggests that medical students and foundation doctors do not feel adequately prepared to prescribe antimicrobials, which may lead them to be overly influenced by suboptimal prescribing cultures. A number of curriculum development and quality improvement initiatives are suggested as a result.

# Presenting Tuesday Evening

## Final category General Virology:

**Poster No 119**

### **The clinical impact of swabbing positive for multiple respiratory viruses**

Farah Shahi<sup>1</sup>, Ammara Asif<sup>1</sup>, David Hamilton<sup>2</sup>

<sup>1</sup>Hull University Teaching Hospitals NHS Trust, Hull, United Kingdom. <sup>2</sup>York Teaching Hospitals NHS Foundation Trust, York, United Kingdom

#### **Abstract**

Little data exists on the clinical impact on adults who swab positive for more than one respiratory virus at once. Should this be associated with higher morbidity/mortality, there would be implications for patient care and potentially infection prevention measures. We reviewed 190 throat/nasopharyngeal swabs positive for respiratory viruses in York Teaching Hospitals NHS Foundation trust between October 2017 and February 2018. Data, collected from the hospital inpatient computer records, included: age, admission/discharge dates, presenting complaint, past medical history, time to swab (from admission), use of oseltamivir, flucloxacillin and other antibiotics, positive microbiology, highest recorded MEWS (excluding ITU), length of ITU stay and discharge status. The modal length of stay was 2-10 days. 69% of patients were aged over 40. There was no difference between admission to ITU and single/multiple respiratory viruses. The presence of influenza virus was higher in patients with a pre-existing cardiac comorbidity compared with pre-existing respiratory or other comorbidities. There did not appear to be a correlation between the number of patients with any comorbidity having multiple respiratory viruses. Interestingly, 18% of patients with multiple respiratory viruses died, compared with 10% of patients with singular viruses. Given the small numbers of patients included, further work is needed. A repeat review is planned across two hospital trusts in the near future.



# Presenting Wednesday Evening

## Poster No 120

### Focal brain lesions in an HIV infected patient: A Diagnostic dilemma

Viplov Vaidya, Aruna Alahari Dhir, Sheela Sawant, Anuprita Daddi

Tata Memorial Hospital, Mumbai, India

#### Abstract

Background—

Focal brain lesions associated with HIV infection can be due to cerebrovascular diseases, primary CNS lymphoma, toxoplasmosis, progressive multifocal leukoencephalopathy or other opportunistic infections. We report a challenging case of an adult HIV infected male with focal brain lesions .

Case Description--

A 62 years old male, presented with history of cough with mucoid expectoration for 3 months and abnormal behaviour for 2 weeks.

Clinical examination revealed delayed obeying of commands and no other sensorimotor deficits. MRI brain revealed ill-defined space occupying lesions involving bilateral frontal lobes. HIV antibodies and HBsAg tests were positive. CT chest revealed multiple cavitary lesions in left upper lobe. Pharyngeal candidiasis was seen during bronchoscopy. Bronchoscopic alveolar lavage revealed Nocardia species. Tests for MTB were negative.

Lung biopsy showed Cytomegalovirus pneumonitis with Aspergillosis. PET scan revealed non FDG avid gliotic changes in brain. CSF and bone-marrow examinations were normal. Brain lesion was considered to be a manifestation of Nocardiosis and biopsy was planned. CD4 count was  $103/\text{mm}^3$  .

Intravenous ceftriaxone, ganciclovir , caspofungin, fluconazole and oral septran were started. Patient was started on HAART (Tenofovir, lamivudine, efavirenz) 1 week later, after explaining the risk of Immune reconstitution inflammatory syndrome. CNS lesion biopsy revealed High grade B-cell Non-Hodgkin's lymphoma. Palliative external Radiotherapy to whole brain was given. The patient has improved clinically and is on regular follow up from 1 year.

Conclusion—

Extensive evaluation and work up is required in cases of focal brain lesions in patients with HIV. Brain biopsy often provides the definitive diagnosis.

# Presenting Tuesday Evening

## Poster No 121

### Impact of Integrase Inhibitors on Weight

Maithili Varadarajan, Hiten Thaker, Anda Samson, Kate Adams, Sarah Harrison, Lorraine Cullen  
Hull Teaching Hospitals, Hull, United Kingdom

#### Abstract

Current evidence suggests that Integrase Strand Transfer Inhibitors (INSTI) are associated with excess weight gain. These increases are particularly significant for black people and women.

Clinic notes of 84 patients stable on INSTI for at least 18 months and attending HIV outpatient clinics at Castle Hill Hospital, Hull Royal Infirmary, Grimsby Hospital and Scunthorpe Hospital were included. Data including height and weight was collected at 18, 30, 42 and 54 months, following commencement of INSTI. Statistical analysis was performed using STATA.

65% of patients were male. The mean age at baseline was 50 and the mean age at diagnosis was 40. Median CD4 count was 669 and viral load was 0 within the last 6 months. 64% of patients were White British, 7% White Other, 21% Black and 9% other.

At 30 months, mean weight increased by 1.41kg, statistically significant at  $p < 0.0065$ . At 42 months, mean weight increased by 2.53kg, significant at  $p = 0.0056$ . At 54 months, mean weight increased by 1.33kg; however this was not significant. Differences in weight amongst the sexes, different ethnicities and different categories of infection as classified by the CDC was observed but was not statistically significant.

Two adverse events- myocardial infarction and stroke were reported but no patient on INSTI died.

Patients stable on INSTI gained weight but the clinical significance of this is unclear, especially as weight changes in patients stable on other antiretrovirals have not been compared. Further research to assess cardiometabolic impact of weight gain following INSTI is required.

# Presenting Wednesday Evening

## Poster No 122

### **Audit to assess adequacy of Screening of latent TB in Newly diagnosed HIV patients.**

Clare Bristow<sup>1</sup>, Uli Schwab<sup>2</sup>

<sup>1</sup>Newcastle University Medical School, Newcastle, United Kingdom. <sup>2</sup>Department of Infection and Tropical Medicine, Newcastle-upon-Tyne Hospitals NHS Foundation Trust, Newcastle, United Kingdom

#### **Abstract**

##### Introduction

Patients with Human Immunodeficiency Virus (HIV) are at an increased risk of latent Tuberculosis (TB) reactivation. HIV TB concurrent infection increases mortality and reduces patient quality of life. Screening for latent TB allows treatment to commence, preventing reactivation. In accordance with British HIV association guidelines, all patients should have a Chest X-ray (CXR) at diagnosis. If patients are determined to be at a high risk of TB, an Interferon Gamma Release Assay (IGRA) test should be done to determine previous exposure to TB.

##### Methods

95 HIV positive patients diagnosed between 2012-2017 at the Royal Victoria Infirmary (RVI) were assessed for inclusion. 4 patients excluded as they had active TB, n=91. Patients were determined to be high risk if they were from an African or Asian country of origin, or if they had a CD4 count below 200 cells/mm<sup>3</sup>. Clinic letters and results on eRecord were reviewed (n=95) between 16/02/2019-21/03/2019.

##### Results

61.5% of patients had a CXR at diagnosis. 72.5% of patients had a CXR or a CT scan. 8 patients had an IGRA test performed, of which 2 were inconclusive. 20% of patients from Africa and 0% of patients from Asia had an IGRA test. Of those patients with a CD4 count below 200 cells/mm<sup>3</sup> 9.1% had an IGRA test.

##### Discussion

An assessment of patient TB risk may need to be undertaken to allow thorough latent TB screening using IGRA tests. Automatic IGRA tests could be done on all patients with a CD4 count <200 cells/mm<sup>3</sup>.

# Presenting Tuesday Evening

## Poster No 123

### Clinical validity of enterovirus PCR testing of skin swabs samples

Vivien Price, Husam Osman, Andrew Bosworth

Public Health Laboratory, Birmingham, United Kingdom

#### Abstract

##### Background:

Enteroviruses cause a diverse spectrum of diseases. In 2018, enterovirus PCR was included in the standard panel of skin swabs investigations, which already included HSV and VZV. Here we show evidence that positive PCR results for enterovirus correlate with clinical data obtained through retrospective review.

##### Method:

A retrospective search of laboratory records for all skin swabs between July 18 and March 19 was performed. Enterovirus PCR positive results were correlated with clinical information from request forms and electronic patient records. A subset of positive samples was sent to the reference laboratory for genotyping by Sanger sequencing of the VP1 gene.

##### Results:

Of 1159 specimens tested, 108 were positive for enterovirus, 194 were positive for HSV 1, 70 for HSV 2, 167 for VZV. Median age for enterovirus positive patients was 1 year, compared with 29 years for HSV and VZV positive patients. 99 enterovirus positive results correlated clinically, 2 did not correlate, and 7 had no clinical information available. Those with clinical correlation had a higher PCR cycle threshold (CT), than those without (mean 27.4 vs. 38).

12 samples were sent to the reference laboratory. Of the 6 that could be successfully genotyped, all were Coxsackie A6.

##### Conclusions

Positive enterovirus PCR in skin swabs correlated well with clinical signs, demonstrating validity. The identification of Coxsackie A6 on all sub-typed isolates further supports the validity of a positive result, as does the younger median patient age for patients testing positive for enterovirus compared to other viral infections.

# Presenting Wednesday Evening

## Poster No 124

### Influenza Testing in the Emergency Department (ED): A Quality improvement project (QIP)

Charlotte Patterson, Ann Sturdy, Dianne Irish, Hilary Connor

Royal Free Hospital, London, United Kingdom

#### Abstract

#### Background

Respiratory illness contributes significantly to higher ED attendance during winter months. Polymerase chain reaction (PCR) testing of nasopharyngeal swabs (NPS) for respiratory viruses is a key investigation, with positive influenza results having both clinical and infection control implications. In response to ED colleagues requesting clear and concise guidance, we undertook a QIP to improve management of seasonal influenza.

#### Methods

A survey of 10 questions was sent to all Doctors and Advanced Care Practitioners (ACPs) working in the ED, and the results collated.

#### Results

There were 21 survey respondents, the majority were registrars. 81% correctly identified how to request influenza testing and 95% knew the symptoms. 90% identified which risk groups should be treated, which personal protective equipment (PPE) should be donned, and suggested Oseltamavir as their treatment of choice. However only 29% of respondents knew where to find the trust guidelines and only 10% correctly prescribed prophylaxis to contacts. 95% would review a discharged case found to have influenza on testing and 67% would treat this case if they were in an at risk group.

#### Discussion and Conclusions

The results show that the majority of staff surveyed correctly identified the symptoms of flu, infection control precautions and those requiring treatment. However, knowledge regarding the location of guidelines, management of contacts and the use of agents other than oseltamivir was low. Based on these results we developed a single-page influenza testing algorithm aiming to improve management in A&E, and will reassess staff knowledge following the introduction of this.

# Presenting Tuesday Evening

Poster No 125

## CYTOMEGALOVIRUS REACTIVATION, RISK FACTORS AND ASSOCIATED CLINICAL OUTCOMES AMONG NON-IMMUNOSUPPRESSED CRITICALLY ILL CIRRHOTIC ADULTS: A LONGITUDINAL OBSERVATIONAL STUDY

Dhara Shah<sup>1,2</sup>, Ekta Gupta<sup>2</sup>, Samba Siva Rao Pasupuleti Pasupuleti<sup>2</sup>, Lalita Gouri Mitra<sup>2</sup>, Rakhi Maiwall<sup>2</sup>

<sup>1</sup>National Center for Disease Control, New Delhi, India. <sup>2</sup>Institute of Liver and Biliary Sciences, New Delhi, India

### Abstract

#### Background:

Although Cytomegalovirus (CMV) reactivation is not uncommon in critically ill patients, it has not been studied for cirrhotic patients in Liver-ICU.

#### Methods:

CMV reactivation (CMV-plasma-DNAemia;  $\geq 500$  IU/ml), risk factors and clinical outcomes were assessed among sero-positive non-immunosuppressed critically ill cirrhotic adults at day 0, 7, 14 and 21 in Liver-ICU.

#### Results:

Of 94 consecutive patients in Liver-ICU monitored, 55(48 men) patients were enrolled. Overall, 20 critically ill cirrhotic adults showed CMV reactivation with a median day for follow-up of 11 (IQR: 8 to 18). Majority ( $n=17/55$ , 30.9%; CI: 19.1-44.8) showed CMV reactivation at day 7. During 21-day follow-up, incidence rate/density of CMV reactivation was 2.75% per person-day (95% CI: 1.68 - 4.26% per person-day). Total leucocyte count (day 0) was an independent risk factor for CMV reactivation (adjusted OR: 1.15, 95% CI: 1.00-1.32,  $p=0.04$ ) with cut-off point of 19.05 (AUROC: 0.696, 95% CI: 0.547-0.844,  $p=0.017$ ). Increased nosocomial infection ( $p=0.009$ ), SIRS ( $p=0.01$ ) and ARDS ( $p=0.04$ ) were observed at day 7, coinciding with CMV reactivation during Liver-ICU stay. ICU-Mortality (61.8%) did not significantly differ with and without CMV reactivation. (55 % vs. 65.7%,  $p=0.43$ ). Patients with CMV reactivation experienced early death and slightly longer stay in Liver-ICU. (Log rank  $p=0.06$  and 0.17, respectively).

#### Conclusions:

CMV reactivation occurs frequently with leucocytosis being an independent risk factor among critically ill non-immunosuppressed cirrhotic adults. Although CMV reactivation was associated with more severe organ dysfunction during Liver-ICU stay, it did not significantly influence ICU-mortality and Length of Liver-ICU stay.

# Presenting Wednesday Evening

## Poster No 126

### Host and pathogen biomarkers to predict bacterial sepsis

Matthew Lewis, Heather Chick, Llinos Harris, Rowena Jenkins, Thomas S. Wilkinson

Swansea University, Swansea, United Kingdom

#### Abstract

Sepsis is defined as life threatening organ dysfunction caused by a dysregulated host response to infection, and is responsible for 52,000 deaths in the UK per year. Approximately 50% of sepsis episodes are related to bacteria where the Gram-negative bacteria *Escherichia coli* is a leading causative agent. Our previous work with the Hywel Dda Health Board has identified a high level of *E. coli* sepsis and in the current work, we aim to identify genetic (genes) and host biomarkers (e.g. IL-6) to discriminate *E. coli* sepsis isolates based on original source of infection.

*E. coli* isolates (n=100) from blood cultures in patients with defined sources of infection (urinary, biliary, intra-abdominal or unknown) were used to investigate potential biomarkers using next generation sequencing, whole blood modelling and molecular microbiology phenotyping.

Sequencing of isolates is underway. Growth curve analysis demonstrated that human serum could modulate *E. coli* growth to three phenotype groups; i) no growth, ii) retarded / decreased growth and iii) unaffected growth (compared to LB control). Whole blood modelling over 6 hours confirmed 4 hours to be the optimal time point to study IL-6 expression. Grouping isolates by source of infection showed that those from the urinary tract and 'unknown' sources produced significantly more IL-6 than *E. coli* K12. Completion of phenotyping will allow association studies to bacterial genotype.

These results will help define new biomarkers associated with the host and genetic biomarkers associated with *E. coli* that will better predict and inform the diagnosis and treatment of sepsis.

# Presenting Tuesday Evening

## Poster No 127

### Characteristics of patients admitted to Intensive care units with severe Influenza and management outcome at a large district general hospital in East of England, UK

Jignna Patel<sup>1</sup>, Tejal Vaghela<sup>1</sup>, Hala Kandil<sup>1,2</sup>

<sup>1</sup>West Hertfordshire Hospitals NHS Trust, Watford, United Kingdom. <sup>2</sup>Faculty of medicine, Alexandria University, Alexandria, Egypt

#### Abstract

##### Background:

Influenza pneumonia can be challenging to treat particularly in critically ill patients. The aim of this study is to review the risk factors for severe influenza infection, the course of the disease, the choice of antivirals and the management outcome in patients admitted with complicated influenza illness to ICU

##### Method

Sixteen patients who were admitted to ICU at West Hertfordshire hospitals NHS Trust with severe influenza illness were reviewed between 20th December 2018 and 14th February 2019. Data on Demographics, vaccination status, viral strain and clinical outcome were collected and analysed.

##### Results

High proportion of patients were below the age of 65 (n=9). The predominant strain was A(H1N1) pdm09 (n=10), followed by A(H3N2) (n=5) and 1 patient had no strain reported. All patients were initiated on Oseltamivir. Six patients developed multi-organ failure and were switched to IV Zanamivir. None of the latter were severely immunosuppressed. 56.25% (n=9) were not vaccinated and third with unknown status (n=5). 66% of the patients below the age of 65 were not vaccinated and had to switch to Zanamavir. Fourteen patients made good recovery and 2 died while on Zanamavir

##### Conclusion:

Our result suggest that the majority of patients admitted to ICU did not carry risk factor for complications and were below the age of 65, but were unvaccinated and infected with A(H1N1)pdm09 strain. Larger study is required to fully understand the risk factors for ICU admission including vaccination status in this group of patients and the optimum antiviral choice.



# Presenting Wednesday Evening

## Poster No 128

### The trend in HIV internet search activity over a 5-year period and the impact of AIDS awareness day

Emma Carter

St Helen's and Knowsley Trust, NHS, Liverpool, United Kingdom

#### Abstract

##### Background

Worldwide there are an estimated 36.9 million people with HIV of which 25% do not know their status. The following study assesses the effect of AIDS awareness day on internet search activity for HIV and analyses other causes of spikes in internet search activity.

##### Methods

Google trends was used to examine search trends for HIV, over the past 5 years. These were correlated with "AIDS' awareness day" to assess the effect of this campaign on public interest. Search trends for the United Kingdom were also analysed. Repeated measures ANOVA and Tukey post-hoc analyses were performed to assess for significant differences in activity.

##### Results

There are increased levels of search activity for HIV in the two weeks surrounding AIDS awareness day on a worldwide level consistently over a 5-year period ( $p < 0.0001$ ). However, in the United Kingdom there is no significant increase compared to the rest of the year. The event corresponding to the largest spike in HIV search activity was the announcement by Charlie Sheen of his HIV status. A spike in search activity was also seen in the United Kingdom corresponding with the MP Lloyd Russell-Moyle announcing his HIV-positive status, this was higher than observed on AIDS awareness day in the UK 2 days later.

##### Conclusions

On a worldwide level AIDS awareness week is achieving its aims of increasing public interest in HIV. However, in the United Kingdom, the announcement by public figures of their HIV-positive status appears to have a greater effect on stimulating public interest.

# Presenting Tuesday Evening

Poster No 129

## Investigation into the presence of Hepatitis E Virus in commercially available venison charcuterie in Scotland

Dimitrios Maroulis

Glasgow Caledonian University, Glasgow, United Kingdom

### Abstract

Hepatitis E Virus is an RNA virus of the *Hepeviridae* family that affects hepatocytes and seriously impacts the health of immunocompromised patients. Genotypes 3 and 4 have been circulating in animal populations such as swine and deer in developed countries, causing food borne infections associated with consumption of contaminated animal food products. While HEV has been circulating in European deer populations and causing food borne infections in Asia, its presence in Scottish venison food products has not been investigated. This study assesses 4 ready-to-eat venison charcuterie products for HEV by performing RNA extraction on duplicate samples with a Qiagen RNeasy Midi kit and using Mengovirus as a process control to determine virus recovery by RT-qPCR. This was followed by RT-PCR with previously described HEV primers, and ligation of the suspected positive fragments in a recombinant pGEMT Easy Vector system which was then cloned in competent *E.coli* cells for propagation. Recombinant plasmids were isolated and subjected to Sanger sequencing. An average RNA extraction efficiency of 5.02% was achieved across all samples, but large deviations between duplicates suggests that further optimisation is necessary in RNA extraction from food products with complex matrices. HEV-sized PCR fragments were detected in 3 out of 4 food products, but the sequencing data showed inefficient ligation of the fragments in the vector, possibly due to low RNA amount and excess of dimerised primers. The likelihood of HEV presence in Scottish venison needs to be investigated further for the detection of transmission routes and the implementation of improved surveillance policies.

# Presenting Wednesday Evening

## Poster No 130

### Cross-sectional survey of viral testing on nasopharyngeal aspirates by laboratories in the UK – Is targeted testing the way forward?

Varathagini Balakumar<sup>1</sup>, Paul Turner<sup>2</sup>, Siba Paul<sup>2</sup>

<sup>1</sup>School of Medicine, Cardiff University, Cardiff, United Kingdom. <sup>2</sup>Torbay and South Devon NHS Foundation Trust, Torquay, United Kingdom

#### Abstract

##### Background

Acute viral bronchiolitis is the most common cause of hospital admissions amongst infants in the UK. The diagnosis is primarily clinical with most infants requiring supportive management. RSV is the main cause and routine confirmation has, until recently, been undertaken via nasopharyngeal swabs or aspirates (NPA). This is no longer recommended by the American Academy of Pediatrics (AAP) with the exception of at risk groups. NICE guidelines confirmed the diagnosis was primarily clinical but didn't explicitly recommend against routine testing.

##### Methods

This study aimed to review the current practice for testing of children admitted with suspected bronchiolitis in hospitals across the UK using a structured questionnaire.

##### Results

In total, 199/209 (95%) laboratories responded. Of these, 140 (70%) performed NPA testing on site with the remainder undertaken elsewhere. Approximately seventy percent [N =99] of trusts performed routine testing on infants with suspected bronchiolitis.

Extended viral PCR testing was offered by some trusts (30%) based on either initial negative screening tests, clinical decision making (36.4% [N=51]), or as part of a mandatory protocol (26.6% [37]). Extended viral PCR testing was not offered by 13 trusts (9.3%).

Point of care (POC) testing for RSV across the UK was available at 47 hospitals. Apart from POC, 46 laboratories did not perform tests out-of-hours although 8 would if requested by a Consultant Paediatrician.

##### Conclusion

We recommend more consensus based on patient outcomes and cost benefits. Locally, we follow targeted NPA testing only for high risk patients in keeping with the AAP guidance.

# Presenting Tuesday Evening

## Poster No 131

### Chronic Hepatitis E Virus (HEV) infection and relapse in an immunosuppressed patient

Jamie McAllister<sup>1,2</sup>, Celia Jackson<sup>1,2</sup>

<sup>1</sup>West of Scotland Specialist Virology Centre, Glasgow, United Kingdom. <sup>2</sup>NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

#### Abstract

##### Case:

A 50 year old woman diagnosed with CLL was treated conservatively with methylprednisolone. She travelled to Mauritius and on return developed a significant transaminitis. A liver screen tested positive for HEV on PCR but HEV IgM/IgG were negative. She did not clear the infection after 3 months so was treated with 6 months of ribavirin. LFTs normalised, she developed HEV IgG and HEV PCR was negative on blood. 3 years later her CLL relapsed, LFTs became deranged, she was found to be HEV PCR positive in blood and HEV IgG was negative. The virus was sequenced and found to be identical to the previous HEV. She received a further 3 months of ribavirin and cleared HEV both in blood and stool.

##### Discussion:

Chronic HEV infection is recognised in immunosuppressed patients. It was initially presumed that this lady had contracted HEV infection in Mauritius but on sequencing, the virus was genotype 3 so probably acquired in the UK either from food or blood products. She was treated appropriately but stool was not tested for HEV PCR at the end of initial treatment, which is now recommended in guidance<sup>1</sup>. If it had been positive it may have led to prolonged treatment with ribavirin although there is little guidance for prolonged infection.

##### Conclusion:

There is little guidance on the treatment of immunosuppressed patients with relapsed HEV infection. The optimal therapeutic approach is unknown in patients who show no response to ribavirin and/or who relapse after re-treatment<sup>1</sup>.

1: EASL guidelines 2018

# Presenting Wednesday Evening

## Poster No 132

### Improving HIV test uptake-Quality Improvement Project

Su Su Htwe<sup>1</sup>, Nick Kennedy<sup>2</sup>

<sup>1</sup>NHS Greater Glasgow and Clyde, Glasgow Royal Infirmary, Glasgow, United Kingdom. <sup>2</sup>NHS Lanarkshire, Monklands University Hospital, Airdrie, United Kingdom

#### Abstract

##### Introduction

Although the number of new cases of HIV in UK have continued to decline in the past decade, the proportion of individuals with late diagnosis is still high. It is crucial to reduce the number of late diagnosis by early testing.

##### Objective

The aim of our study was to promote HIV test uptake to improve early diagnosis by ensuring all patients with clinical indicator conditions as per 2008 BHIVA HIV testing guidelines had appropriate HIV testing.

##### Methods

The study was performed in the infectious disease unit, Monklands University Hospital, Scotland. We reviewed the overall rate of HIV testing pre- and post- intervention. It involved two stages over a six-week period in July, 2018. Stage one included base line data collection to determine HIV test uptake and clinical indication for testing.

In stage 2 (intervention and re-assessment), we performed an initial program of education and training to improve awareness of HIV testing guidelines and clinical indicator diseases.

##### Results

The overall test rate increased to 80.9% from 59%. All patients with clinical indicator conditions were tested post intervention (100%) in comparison with 64% as in base line. No patient refused testing. Two patients tested positive, one presented with PCP pneumonia and the other with community acquired pneumonia.

##### Conclusion

Our study demonstrated that universal HIV test uptake is achievable. The early diagnosis of HIV remains an important Public health challenge. We believe that further studies are needed to evaluate if this could be translatable to other patient populations with complex social factors.

# Presenting Tuesday Evening

## Final category: Infection prevention

### Poster No 133

#### Mobile Phone Contamination in Clinical Environments 'The True Extent'

rebecca Simmonds<sup>1</sup>, Emma Hayhust<sup>2</sup>

<sup>1</sup>University of South Wales, Rhonda Cynon Taff, United Kingdom. <sup>2</sup>University of South Wales, Rhonda Cynon taff, United Kingdom

#### Abstract

Smart phones are integral , especially within healthcare. However, there are increasing concerns regarding their contamination and potential infection control risk. Bacteria under selective pressure can rapidly acquire resistant mechanisms leading to the assumption; mobile phones used within clinical environment may harbour bacteria associated with a higher infection mortality rate.

Using next generation sequencing technology, characterise the true extent of bacterial contamination on mobile phones of hospital staff and determine the presence of multi-drug resistant bacteria associated with hospital acquired infections.

DNA was extracted from the swab tips of 450 Participant's mobile phones . 16S rRNA primers were used to characterise and compare the microbiome on devices from the hospital staff and a control group. Staphylococcus aureus and Enterococcus faecalis underwent Kirby Baur disc diffusion.

Results The microbiome revealed the extent of contamination far exceeds anything previously reported. In particular, gram-negative bacteria (including several important potential pathogens) were grossly under detected . 198 bacteria genus were discovered on mobile phones of which 34 were unique to the hospital. Differences were also detected between hospital departments. MRSA, VRSA and VRE were only detected within the hospital group.

Our results indicate traditional culture-dependent swabbing methods don't provide an accurate account of mobile phone contamination. This may also be true in other areas relevant to infection control. Used within clinical environments could expose patients to unknown levels of multi drug resistant bacteria. Decontamination between patient contact should be a necessity to prevent the undermining of hand hygiene and the transmission of MDR bacteria.

# Presenting Wednesday Evening

## Poster No 134

### The public health task force in the management of the *Mycobacterium chimaera* case in the Vicenza hospital, Italy.

sara mondino<sup>1</sup>, vinicio manfrin<sup>2</sup>, mario rassu<sup>3</sup>, Loredana Fallico<sup>3</sup>, paola mantoan<sup>2</sup>, maria paola zanon<sup>4</sup>, romina cazzaro<sup>1</sup>, salvatore barra<sup>5</sup>

<sup>1</sup>Hospital Medical Direction, vicenza, Italy. <sup>2</sup>Infectious Diseases Department, vicenza, Italy. <sup>3</sup>Microbiology Department,, vicenza, Italy. <sup>4</sup>Specialization School in Hygiene and Preventive Medicine University of Verona, verona, Italy. <sup>5</sup>Health Management Office, vicenza, Italy

#### Abstract

##### BACKGROUND

Since 2013, an ongoing global outbreak of *Mycobacterium chimaera* among patients who underwent open-chest surgery has been recognized with all cases linked to contamination of a specific brand of heater-cooler device (HCD). Nine cases were diagnosed with disseminated *M. chimaera* infection in our hospital. Following the first cases HCD was changed with different technology assuring no release of contaminated particles. The potentially at-risk population was managed throughout a multidisciplinary task force.

##### METHODS

In November 2018, following an infected patient' death, a huge impact on public opinion was registered following mass media publicity of the case. A task force was built up to face the concern of the population: a [press release](#) and an official note were publicly released addressing risk factors and critical symptoms and a call center was activated. The notice was transmitted to general practitioners too. People complaining symptoms suggestive for infection, primarily screened by an expert group through telephone interview, were addressed to an infectious consultation.

##### RESULTS

The official note was delivered to 2181 potentially at risk patients chosen by cardio surgery registry and 567 of them called back the call center and were interviewed. 66 patients were judged to need infectious specialist consultation: 12 were submitted to further microbiological analysis and 4 required hospitalization. No new cases of infectious were detected.

##### CONCLUSION

The public health task force promptly activated granted safety measures for the population; furthermore HCD will soon be settled in separated place out from operating room.

# Presenting Tuesday Evening

## Poster No 135

### ***Candida auris* real-time PCR for surveillance of patients and environment**

Surabhi Taori, Kirstin Khonyongwa, Jeevani Kumarage, Melvyn Smith

Kings College Hospital, London, United Kingdom

#### **Abstract**

##### **Background–**

*Candida auris* an emerging fungus which has caused nosocomial outbreaks worldwide. Screening for surveillance is challenging as it's a slow grower, samples may have multiple candida spp and many commercial assays have limited accuracy. Following an outbreak in 2016, a real-time PCR was developed for rapid patient and environmental screening. Laboratory parameters, results and pitfalls from Jan 2018 to March 2019 are described.

##### **Methods –**

Evaluation was performed using EQA panels and validated on clinical swabs and urine samples. Patient screening was performed in high risk clinical areas from nose, throat, axilla and groin swabs and catheter urine. Environmental screening was done in areas where transmission was detected. Positive or indeterminate samples were cultured and colonies identified on the Vitek 2 and confirmed by PHE reference laboratory.

##### **Results –**

The Limit of detection was 100 organisms/ml. Sensitivity, specificity, PPV and NPV were 100.00%, 99.35%, 85.71%, and 100.00%. 4,792 urines and 10,819 pooled swabs were tested. 21 colonised patients were identified in two outbreaks and two isolated transmission events. Median turn-around time for positive results was 24h30min (range 04:22-96:46h) and 143h14min (range 75-406h) for PCR and culture respectively. Urine samples did not add to the overall sensitivity of screening. *C. auris* DNA was detected in 30/84 (35%) environmental swabs but *C. auris* isolated in only 2/84. Drawbacks of the PCR include reagent contamination seen on two occasions.

##### **Conclusion –**

*C. auris* screening by PCR is a rapid means of detection in both patients and environment but prudent use of culture is required to help determine infectivity.



# Presenting Wednesday Evening

## Poster No 136

### The power is in our hands: a QI project for sustainable hand hygiene

Ghazaleh Mohammadi-Zaniani, Lucy Wales

The Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, United Kingdom

#### Abstract

#### Background

Methicillin Sensitive Staphylococcus Aureus (MSSA) is a commensal associated with hospital acquired infection (HAI). MSSA HAI is associated with significant morbidity, and hand hygiene has been identified as a prominent component of HAI prevention strategies.

#### Methods

A project using Quality Improvement methodology was devised to improve rates within the surgical department: a locally identified MSSA HAI hotspot. Baseline monitoring was done using WHO checklists and departmental education presented on hand hygiene. Continued weekly auditing and feedback was carried out by the multidisciplinary team (MDT) on one ward over a four-month period, and adherence was prompted by verbal reminders and departmental education. A long-term strategy was employed for regular monitoring with a nominated member of the MDT to maintain improvements.

#### Results

Baseline audit revealed adherence of 10-52% for registrar-led rounds, and 22-62% for consultant-led, across the 5 points of hand hygiene. Particular weakness was noted before patient contact and entry to clinical areas, which was addressed with departmental education. Initial adherence after education was low (6-38%), but subsequent improvement was seen the following month (74-93%). Some of this was maintained over the final two months of data collection (50%-100%), and a PDSA cycle was employed to address this variability. As such, an MDT-wide monitoring schedule was put in place at the end of the data collection period.

#### Conclusion

This QI project sought to achieve sustainable change in adherence to hand hygiene. An MDT-wide system of monitoring and education effected this, and may prove an effective strategy in similar inpatient settings.

# Presenting Tuesday Evening

## Poster No 137

### Pre-operative antibiotics and elective colonic resections: Do they reduce surgical site infection and anastomotic leak rates?

James Murray, Nilofer Husnoo, Stuart Bond, Nicholas Wroe, Wasim Shabir, Rebecca Murray, Janahan Sarveswaran, Mohamed Basheer

MidYorks NHS Trust, Wakefield, United Kingdom

#### Abstract

##### Background:

Surgical site infections (SSI) and anastomotic leaks (AL) are a significant source of morbidity in patients undergoing elective colorectal surgery. There is evidence for use of pre-operative oral antibiotics (OAB), in combination with mechanical bowel preparation (MBP), to reduce SSI and AL rates in this population. We aimed to determine whether the use of OAB pre-operatively reduced our local SSI rate in elective left-sided colonic resections.

##### Methods:

A pre-post intervention study was conducted in a large regional hospital from September 2018 to July 2019. Following approval by the Trust's Medicines Optimisation Group, patients received oral metronidazole 400mg and oral neomycin 1g at 06:00, 14:00 and 22:00 on the day before surgery. The rates of SSI and AL at 30 days were compared with pre-intervention patients. Standard induction intravenous antibiotics were given to both groups but MBP practices were disparate among the consultant body and were outside the scope of this project. Chi Square and Independent T-tests were used to analyse the data.

##### Results:

Data on 100 pre-intervention patients and 47 post-intervention patients showed similar baseline characteristics. SSI rates were 17% (17/100) in the pre-intervention group and 8.5% (4/47) in the post-intervention group ( $p=0.170$ ). Anastomotic leak rates were 7.0% (7/100) and 2.1% (1/47) respectively ( $p=0.225$ ).

##### Conclusion:

The use of pre-operative OAB was associated with a reduction in SSI and anastomotic leak rates, although these did not reach statistical significance. Possible reasons for this include low patient numbers and inconsistent use of MBP.

# Presenting Wednesday Evening

## Poster No 138

### Anti-biofilm potential of peptides against foodborne pathogens

Cunkuan Shen<sup>1</sup>, Rinka Kubo<sup>1</sup>, Yoshimitsu Masuda<sup>2</sup>, Ken-ichi Honjoh<sup>2</sup>, Takahisa Miyamoto<sup>2</sup>

<sup>1</sup>Department of Bioscience and Biotechnology, Graduate School of Bioresource and Bioenvironmental Science, Kyushu University, Fukuoka, Japan. <sup>2</sup>Department of Bioscience and Biotechnology, Faculty of Agriculture, Graduate School, Kyushu University, Fukuoka, Japan

#### Abstract

##### Background:

Biofilm is defined as a community where bacterial cells encased in a matrix of extracellular polymeric substances adhere to each other and/or to a surface. In food industry, foodborne pathogens like *Salmonella* are capable of forming biofilms on open surfaces. We have shown anti-biofilm effects of  $\epsilon$ -poly-lysine (PL) and milk serum protein (MSP) against various bacteria. In this study, peptides derived from egg was investigated for anti-biofilm effects on foodborne pathogens.

##### Methods:

Effects of several kinds of peptides, including 3 kinds of hydrolysates derived from egg, together with PL and MSP, on biofilm formation of 4 kinds of foodborne pathogens (*Escherichia coli* O157:H7, *S. Typhimurium*, *Staphylococcus aureus* and *Listeria monocytogenes*) were investigated on microtiter plates through biomass quantification with crystal violet staining.

##### Results:

Both 0.01% PL and 0.25% MSP significantly decrease biofilm formation of all the pathogens, while PL was more effective than MSP against gram-negative bacteria. All the hydrolysates showed considerable effect under high concentration (1%), among them hydrolysate 2 was more effective than the others since it inhibited biofilm formation of *S. Typhimurium*, even under concentration of 0.1%.

##### Conclusion:

The egg white hydrolysate contains some antibacterial peptides that could modulate biofilm formation of *S. Typhimurium* and other pathogens, which could be beneficial to develop new strategies to combat biofilm infections.

# Presenting Tuesday Evening

Poster No 139

## Effects of Bacteriophage on Inhibition and Removal of Multispecies Biofilms of *Escherichia coli* O157 and Non-O157

Yu Zhang, Minh Duc Hoang, Yoshimitsu Masuda, Ken-ichi Honjoh, Takahisa Miyamoto

Department of Bioscience and Biotechnology, Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, Fukuoka, Japan

### Abstract

Shiga toxin-producing *Escherichia coli*, especially *E. coli* O157 is an important foodborne pathogen capable of coexisting in multispecies biofilms found in almost all the natural environments. Biofilm cells are usually more resistant than planktonic cells against environmental stresses. Thus, *E. coli* O157 in biofilms is a serious food safety concern. This study describes the characterization of a bacteriophage FP43 isolated from bovine intestine and the ability of FP43 to inhibit and remove multispecies biofilms of *E. coli* O157 strain 196 and non-O157 strain 104. Phage FP43 has a short latent period of 15 min and a large burst size of 98 PFU/cell, with great stability at temperatures ranging from 4 to 60°C and pH from 4 to 9.

To evaluate the effects of FP43 on *E. coli*, in microplate, biofilm formation was determined by crystal violet staining as well as viable counts of biofilm and planktonic cells by conventional plating method. Phage FP43 decreased biofilm adhesion of *E. coli* cells with equal proportions of *E. coli* O157 and non-O157 by 82.4%. Viable counts were also reduced by 2.76 and 2.85 log in *E. coli* O157 and total biofilm cells after 6-h infection, respectively, compared with control. In planktonic cells, *E. coli* O157 and total counts decreased by 3.44 and 3.62 log after a 4-h phage treatment, respectively. Moreover, after a 6-h exposure to phage FP43, more than 60% of established biofilms were removed, and *E. coli* O157 and total viable counts in biofilm were decreased by 2.07 and 1.93 log, respectively. These findings suggest that phage FP43 seems to be a potential agent against *E. coli* O157 in multispecies biofilms.

# Presenting Wednesday Evening

## Poster No 140

### **Airborne Decontamination of an Intensive Care Isolation Room using 405 nm Antimicrobial Light Technology**

Laura Dougall<sup>1</sup>, Malcolm Booth<sup>2</sup>, John Anderson<sup>1</sup>, Scott MacGregor<sup>1</sup>, Michelle Maclean<sup>1,3</sup>

<sup>1</sup>The Robertson Trust Laboratory for Electronic Sterilisation Technologies (ROLEST), Department of Electronic and Electrical Engineering, University of Strathclyde, Glasgow, United Kingdom. <sup>2</sup>Intensive Care Unit, Glasgow Royal Infirmary, Glasgow, United Kingdom. <sup>3</sup>Department of Biomedical Engineering, University of Strathclyde, Glasgow, United Kingdom

#### **Abstract**

Lighting systems which incorporate antimicrobial 405nm light have been developed for safe continuous, environmental decontamination, with previous studies demonstrating efficacy for decontamination of frequently-touched surfaces around clinical areas. This study provides first direct evidence of the effects of this decontamination system for control of airborne contamination.

The study was conducted in a patient-occupied ICU isolation room over a 15-day period, with air samples collected at set times (before, during and after daily use of the decontamination system). Samples were also collected in the empty room prior to occupation. Environmental monitoring occurred every second day using a sieve-impactor sampler (500L air samples collected every 10-min over 2-hr (n=13)). Room activity was logged, and bacterial contamination levels recorded as cfu/m<sup>3</sup> of air.

After 2-day use of the system, airborne contamination significantly decreased from a mean of 905.2 cfu/m<sup>3</sup> to 48.8 cfu/m<sup>3</sup> (P=0.002). Levels then remained fairly consistent over the remaining period of system use (48.8-189.8 cfu/m<sup>3</sup>) before significantly rising after the system was turned off for 3-days (P=0.001). Additional samples collected in isolation rooms without the decontamination system demonstrate that the levels of airborne bioburden tend to increase upon increasing patient stay, however low levels were maintained as patient occupation increased when the system was in use.

This study provides first direct evidence of the susceptibility of airborne bacteria to 405nm light within a clinical setting. This patient-safe technology has the potential to improve infection control strategies by complementing existing measures, which could reduce the number of infections arising from environmental sources.

# Presenting Tuesday Evening

## Poster No 141

### CPE in Beaumont Hospital – Trying to understand an increasing and challenging pathogen

Emma Skelly<sup>1</sup>, Margaret Foley<sup>2</sup>, Mairead Skally<sup>2</sup>, Aoife Reilly<sup>1</sup>, Hilary Humphreys<sup>1,2</sup>, Fidelma Fitzpatrick<sup>1,2</sup>

<sup>1</sup>Royal College of Surgeons in Ireland, Dublin, Ireland. <sup>2</sup>Beaumont Hospital, Dublin, Ireland

#### Abstract

##### Background

The prevention and control of carbapenemase-producing Enterobacteriales (CPE) cross-infection is increasingly difficult worldwide. Patients exposed to a CPE positive patient in our institution are informed, offered CPE screening and their clinical records flagged on our hospital information system since mid-2017 as recommended nationally. However, no assessment of the numbers of CPE contacts has been performed prior to this.

##### Objective / Aims

To retrospectively identify and quantify CPE contacts patients in Beaumont Hospital between 2011 and mid-2017.

##### Methods

Patients with an exposure to CPE positive patients while an inpatient were identified retrospectively. Each CPE contact was evaluated for: number of CPE screens taken, mortality, existing multidrug resistant colonisation, duration of CPE exposure, recurrent hospitalisation after CPE exposure and CPE colonisation within this group.

##### Results

Twenty-eight CPE positive patients were identified from January 2011 – May 2017. This included 22 OXA-48, six KPC and four NDM patients; two patients had OXA 48 and NDM genes. A total of 237 patients were identified as CPE contacts of whom 124 (52.7%) had 190 CPE screens. Four CPE contact patients were identified as CPE positive (all OXA-48), however, only three (1.2%) were associated with exposure to one of the 28 CPE positive patients.

##### Conclusions

The identification of potential CPE contacts and subsequent CPE positive patients is essential to prevent further cross-transmission. Of the CPE contacts screened, only three CPE positive patients were associated with exposure to the index patients, which may indicate good adherence with infection control precautions or low sensitivity of culture-based screening.

# Presenting Wednesday Evening

## Poster No 142

### 405-nm Light for Bacterial Reduction in Blood Plasma: Preliminary investigations into antimicrobial efficacy and plasma protein integrity

Caitlin Stewart<sup>1</sup>, Lucy Sinclair<sup>1</sup>, Michelle Maclean<sup>1</sup>, Scott MacGregor<sup>1</sup>, Chintamani Atreya<sup>2</sup>

<sup>1</sup>University of Strathclyde, Glasgow, United Kingdom. <sup>2</sup>FDA, Washington, USA

#### Abstract

##### Background –

Pathogen reduction technologies (PRT) for blood products can reduce the incidence of transfusion-transmitted infection and associated wastage of blood products. Visible 405nm-light has been shown to inactivate bacteria *in situ* in bagged blood plasma without the addition of photo-sensitive chemicals. However, threshold levels for plasma protein compatibility and optimal bactericidal activity are currently unknown. This study investigates different treatment conditions and their suitability for safely inactivating bacteria in blood plasma.

##### Method –

Plasma seeded with *Staphylococcus aureus* ( $10^2$ – $10^5$  CFU/ml) was exposed to 405nm-light at low and high irradiances (10, 100mW/cm<sup>2</sup>) with treatment times ranging between 0.2–7-hr ( $\leq 252$  Jcm<sup>-2</sup>). SDS-PAGE was then used to assess the light effect in terms of antimicrobial treatment levels on plasma protein integrity.

##### Results –

High and low intensity treatment regimens achieved significant bacterial inactivation ( $P < 0.05$ ) with doses of 252 Jcm<sup>-2</sup> achieving  $\geq 99.3\%$  reduction. Results suggest that lower irradiances have greater germicidal efficiency, with use of 10mWcm<sup>-2</sup> achieving up to 30% greater inactivation than equivalent doses using 100mWcm<sup>-2</sup>. SDS-PAGE analysis demonstrated no major detrimental impact on protein integrity with any of the treatment conditions investigated. Minimal changes in protein bands ( $\approx 28$ kDa) were observed relative to positive control samples after application of doses  $> 144$  Jcm<sup>-2</sup>.

##### Conclusion-

The results of this study have highlighted the safety potential of 405nm-light treatment on blood plasma. Further research is required to determine the upper and lower threshold treatment levels and functionality of plasma proteins post-exposure for further development of this technology as a PRT tool for application in transfusion medicine.

# Presenting Tuesday Evening

## Poster No 143

### ***Lessons learned from a mandatory Irish Carbapenemase producing Enterobacteriales (CPE) contact communication programme at University of Limerick Hospitals Group (ULHG).***

Barbara Slevin, Ruth Waldron, Lorraine Power, Sarah Kennedy, Bushra Farah, Sara Woods, Alison Moloney, Regina Monahan, James Powell, Edel Woodland, Paul Burke, Nuala O'Connell

University of Limerick Hospitals Group, Limerick, Ireland

#### **Abstract**

##### **Background:**

ULHG first detected CPE in 2009. A decision was made at the outset to flag CPE contacts on the surveillance software system (ICNet) rather than write to discharged contacts. CPE was declared a national public health emergency, October 2017. In September 2018, the Irish CPE Expert Group mandated that all hospitals write to CPE contacts, as per open disclosure policy, to inform them of their status. Screening was also offered. An eligible contact was defined as one who did not have 4 negative screens since exposure.

##### **Methods:**

An ICNet search was conducted to detect all CPE contacts, cross-checking with the national death registry before delineating the number of CPE screens tested via the Laboratory Information System. Processes were put in place to address queries from patients; a generic helpline and a recorded telephone line for clinical concerns or complaints. Screening packs were developed. National template letters were posted to patients, their GPs and consultants.

##### **Results:**

2016 CPE contacts were identified from Feb 2009 to Sept 2018. 422 patients contacted the generic helpline; 347 requested call-back from the CPE nursing expert. 115 requested testing packs with 103 delisted as contacts. Patients voiced many concerns including anger for the untimely notification, upset at the potential risk of CPE acquisition and criticism regarding the letter content.

##### **Conclusions:**

The decision to inform patients is appropriate but it must be timely with access to understandable information and support from a suitably trained professional. The communication programme continues prospectively in the setting of CPE endemicity.



# Presenting Wednesday Evening

## Poster No 144

### Unravelling the benefits and barriers to utilising whole-genome sequencing in the investigation of outbreaks

Benjamin Parcell<sup>1,2,3</sup>, Professor Stephen Gillespie<sup>2</sup>, Professor Matthew Holden<sup>2</sup>

<sup>1</sup>Department of Microbiology, Ninewells Hospital, NHS Tayside, Dundee, United Kingdom. <sup>2</sup>Infection Group, University of St Andrews, St Andrews, United Kingdom. <sup>3</sup>Population Health and Genomics, School of Medicine, University of Dundee, Dundee, United Kingdom

#### Abstract

##### Background

This prospective study was established to develop and evaluate methods to harness pathogen sequencing in the clinical microbiology environment. We describe new insights into the clinical benefits of using whole-genome sequencing (WGS) for outbreak investigation with solutions for the practical barriers to implementation in clinical settings.

##### Methods

Surveillance software (ICNet) and statistical process control charts (SPCs) detected potential outbreaks of methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), carbapenem-resistant Enterobacteriaceae (CRE), Enterobacteriaceae producing extended spectrum  $\beta$ -lactamases (ESBLs), *Listeria* spp. and *optrA* gene positive enterococci. Isolates were sent to reference laboratories for conventional typing and the Infection Group, School of Medicine, University of St Andrews for WGS (Illumina Inc, San Diego, CA, USA) and bioinformatic data analysis.

##### Results

Over 400 isolates have been sequenced to date. WGS replaced multiple typing techniques in a *Pseudomonas aeruginosa* ICU outbreak. It confirmed two patient's *Listeria* spp. isolates were indistinguishable prompting hospital kitchen inspections, identified a patient to be carrying two strains of VRE and confirmed that vancomycin-sensitive *Enterococcus faecium* isolates related to a VRE cluster. We observed five main barriers to implementing WGS (infrastructure, performance/quality assessment of data, isolate selection, clinical result interpretation and database management).

##### Conclusion

WGS is beneficial in outbreaks of uncommon organisms and when conventional typing cannot show whether isolates are linked or not. Identifying barriers assisted us in developing a clinical decision aid that can be used by clinicians when applying WGS to outbreak investigations.

# Presenting Tuesday Evening

## Poster No 145

### Real-time Monitoring of Aerosols Generated from Toilet Flushing

Mehael Fennelly<sup>1,2</sup>, Stig Hellebust<sup>1</sup>, John Sodeau<sup>1</sup>, Michael Prentice<sup>2,3</sup>

<sup>1</sup>Environmental Research Institute, School of Chemistry, University College Cork, Cork, Ireland.

<sup>2</sup>Department of Pathology, University College Cork, Cork, Ireland. <sup>3</sup>APC Microbiome Institute, University College Cork, Cork, Ireland

#### Abstract

Flushing toilets generate visible droplets from turbulent flow, but also produce numerous smaller airborne droplets (~micrometres in size) through atomisation. Flushing may aerosolise pathogens from stool or urine, spreading disease. This study continuously monitored aerosols in a shared office lavatory over a week using a biological particle detector, the Wideband Integrated Bioaerosol Sensor (WIBS). This instrument monitors individual particle sizes and numbers and identifies fluorescent particles likely to be droplets containing bacteria.

The toilet was a standard wash-down design, (Armitage Shanks), with a lid. No statistically significant variation between fluorescent particle counts was found between periods prior to flushing. Fluorescent particle numbers and intensity increased with toilet flushing, remaining above background for 5 minutes post-flushing on average. Placing the toilet lid down significantly ( $P < 0.001$ ) reduced total and fluorescent particle counts during and after flushing by 30-50%. Lid usage significantly increased ( $P < 0.001$ ) particle diameter from 1.5  $\mu\text{m}$  to 2.1  $\mu\text{m}$  and increased particle fluorescence intensity ( $P < 0.001$ ) during flushing and after flushing, intensity remaining above background for 16 minutes.

This suggests standard lid usage reduces but does not eliminate flush-related bioaerosols. Lid-use changes their characteristics and apparently prolongs their residence time in room air. The aerosol change could represent particle agglomeration by a pressure-related Kelvin effect or particle re-aerosolisation from different surfaces in the toilet rather than exclusively originating from droplet generation. Previous studies reporting the effect of toilet lids have found that they prevent the spread of visible droplets on flushing, however the effect on smaller particles is less clear cut.

# Presenting Wednesday Evening

## Poster No 146

### Prevention of Nebulised Drug Dispersal using an Extractor Tent

Mehael Fennelly<sup>1,2</sup>, Joseph Keane<sup>3</sup>, Lorraine Dolan<sup>3</sup>, Barry Plant<sup>4</sup>, John Sodeau<sup>1</sup>, Michael Prentice<sup>2,5</sup>

<sup>1</sup>Environmental Research Institute, School of Chemistry, University College Cork, Cork, Ireland.

<sup>2</sup>Department of Pathology University College Cork, Cork, Ireland. <sup>3</sup>Respiratory Assessment Unit, St. James Hospital, Dublin, Dublin, Ireland. <sup>4</sup>Adult Cystic Fibrosis Centre, Cork University Hospital, Cork, Cork, Ireland. <sup>5</sup>APC Microbiome Institute, University College Cork, Cork, Ireland

#### Abstract

Nebulisers convert liquids into a fine mist of suspended particles that are inhalable into the respiratory tract. They are used to deliver drug therapy by the respiratory route, for example bronchodilators, or to aid production of diagnostic sputum samples (sputum induction). On continuous monitoring of biological airborne particles in a respiratory ward over 4 weeks using a biological particle detector (WIBS) the majority of detected particles were attributable to nebuliser therapy. Tents with extractor/filter devices are indicated for infection control purposes in collection of induced sputum from patients with suspected tuberculosis. We tested the efficacy of an extractor tent (Demistifier 2000, Peace Medical) on reducing detectable aerosols from nebulised bronchodilator drugs by continuously monitoring a room outside a tent containing a nebuliser. The mean fluorescent particle count per m<sup>3</sup> was 0.63 and 0.31 (equivalent to background levels pre-nebuliser) for nebulised Ventolin and Ipramol, respectively, when they were nebulised within the tent. Removing the tent and nebulising directly into room air resulted in a 2.56×10<sup>4</sup> and 4.64×10<sup>4</sup>-fold increase in particle concentrations for Ventolin and Ipramol, respectively, over background levels. WIBS monitoring therefore showed 100 % efficacy of the tent in restricting spread of nebulised drug particles. Extractor tents can prevent spread of drug particles from nebulised therapy. The implications of this will be discussed.

# Presenting Tuesday Evening

## Poster No 147

### **Sanitisation effects of selected medicinal plant extracts against *Escherichia coli* O157:H7 and *Salmonella enterica* subsp. *enterica* (Serovar Typhi) on *Malus pumila* Mill. fruit surfaces**

Lindsay Mudiwa Kasambala, [Walter Chingwaru](#)

Bindura University of Science Education, Bindura, Zimbabwe

#### **Abstract**

Raw fruit and vegetables have become a major risk factor for diarrhoea outbreaks across the world. *Salmonella enterica* and Shiga toxin-producing *Escherichia coli* account for 21% and 10% of all diarrhoeal outbreaks around the globe. Despite these statistics, the quantitative risk of consuming RTEFV remains unknown. The potential utility of medicinal plant extracts as disinfectants of RTEFV has remained unexplored. This study sought to assess the efficacy of extracts of *Vernonia amygdalina* and *Ximenia caffra* in the removal of *Salmonella typhi* and *E. coli* on *Malus pumila* Mill. fruit surfaces. Two-cm<sup>2</sup> square sections of apple epidermal tissues from apples spiked with *S. typhi* and *E. coli* were soaked in prepared extracts for 90 minutes. Microbial loads on washed surfaces were determined using conventional agar plate based techniques. Washing of apple surfaces with ethanolic extracts of freshly crushed leaves of *X. caffra* (X-FLEE) and dry leaves of *V. amygdalina* (V-DLEE) achieved at least 7 log reductions in counts of *E. coli* and *S. typhi* without changes in surface morphology and colour. The selected extracts were shown to be rich in alkaloids, tannins and flavonoids, which are known to harbour antimicrobial activities (inhibitory and cidal effects). Extracts from the selected plants, especially ethanolic extracts of *X. caffra* and *V. amygdalina* have potential as sanitisers of apples against diarrhoeagenic *E. coli* and *S. typhi*. We therefore recommend the use of ethanol as a solvent of choice in obtaining plant extracts for use-, as well as the use of as well as vinegar, chlorinated water or bicarbonate of soda as sanitisers of fresh apple surfaces.

# Presenting Wednesday Evening

## Poster No 148

### Prevalence of MRSA colonisation amongst patients undergoing elective orthopaedic implant surgery at North Bristol NHS Trust

Clemency Nye<sup>1</sup>, Jason Webb<sup>2</sup>, Fiona Hammond<sup>3</sup>, Elizabeth Darley<sup>4</sup>

<sup>1</sup>Acute Medicine, North Bristol NHS Trust, Bristol, United Kingdom. <sup>2</sup>Trauma and Orthopaedics, North Bristol NHS Trust, B, United Kingdom. <sup>3</sup>Infection Prevention & Control, North Bristol NHS Trust, Bristol, United Kingdom. <sup>4</sup>Infection Sciences, North Bristol NHS Trust, Bristol, United Kingdom

#### Abstract

##### Introduction:

National guidelines recommend MRSA screening of all patients before elective orthopaedic implant procedures (EOIP) as a measure to reduce risk of MRSA surgical site infection (SSI). With low prevalence of MRSA in UK currently, this universal approach of screening all EOIP patients may be unnecessary.

##### Objectives

To determine MRSA colonisation rate of EOIP patients pre surgery and number of MRSA-positive patients developing surgical site infection (SSI) within 30 days.

##### Methods:

North Bristol NHS Trust is the largest Orthopaedic unit in Southwest England. It performs over 6000 elective Orthopaedic operations annually, including 2000 hip and knee joint replacements. All major elective cases are reviewed in a pre-operative assessment clinic where MRSA screening, amongst other tests, is performed.

The pathology IT system was interrogated to identify data on patients screened for MRSA in the orthopaedic pre-assessment clinic from 1<sup>st</sup> January to 31<sup>st</sup> March 2019. Routinely collected SSI data was reviewed for details of any SSI in these patients.

##### Results:

439 patients were screened in the pre-operative clinic. 4/439 patients (0.9%) had positive screens. Applying national MRSA screening criteria, 2/4 patients had recognised risk factors for MRSA colonisation (including one patient previously MRSA colonised), and 2/4 did not. All 4 patients were decolonised pre-surgery and none developed SSI. No patient developed MRSA SSI.

##### Conclusions:

Approximately 1%, of patients attending for EOIP are colonised with MRSA in this Trust. No patient developed MRSA SSI in the 3month period. There may be potential to rationalise the approach to MRSA screening in EOIP patients.

# Presenting Tuesday Evening

Poster No 149

## QI audit: management of GBS bacteriuria in pregnancy in a Maternity Assessment Unit

Bijan Ghavami-Kia, Philippa Marsden, Manjusha Narayanan

Royal Victoria Infirmary, Newcastle upon Tyne, United Kingdom

### Abstract

Intrapartum antibiotic prophylaxis (IAP) should be offered to women with group B streptococci (GBS) bacteriuria identified during pregnancy and should receive appropriate treatment at time of diagnosis as well as IAP (RCOG, Green top 36). A one year sample was taken (April 2018 - March 2019) to retrospectively analyse 47 GBS urine results from Maternity Assessment unit (MAU) at RVI, Newcastle. The unit has a standard flowchart for sending urine culture and follow up, GBS yellow sticker alert for patient notes and guidance for administration of IAP. 70 % of GBS positive results were for MSU received in the third trimester. Only 44.6 % of GBS positive women had monthly urine sent for culture for follow up. 72.3 % patient notes had GBS alert stickers (the stickers help in quick identification of women requiring IAP at time of labour and delivery). Only 53% of these had sticker displayed on top of notes, 47% had stickers in various places inside of notes. 83% GBS bacteriuria positive women received IAP. We aim to present data to MAU with a view to improving current numbers for all of the above criteria as it is imperative to follow current guidelines to try and prevent GBS infection in neonates and conduct a re-audit in due course.

# Presenting Wednesday Evening

## Final category: Laboratory diagnostics

Poster No 150

### Rapid Determination of Antimicrobial Susceptibility of Gram-Negative Bacteria from Positive Blood Cultures Using an Innovative Method

Kerry Falconer, Ben Parcell, Robert Hammond, Stephen Gillespie

University of St Andrews, St Andrews, United Kingdom

#### Abstract

**Introduction:** A blood stream infection (BSI) presents a complex and serious health problem and is growing in light of the eminent antimicrobial resistance threat. Progress must be made towards rapid BSI diagnosis and antimicrobial susceptibility testing (AST) to reduce preventable death in BSI.

**Methods:** Positive blood cultures from Ninewells Hospital, Dundee were studied prospectively. Flagged positive blood cultures were processed by Gram-staining, Vitek identification and AST or disc diffusion for ceftriaxone susceptibility and by scattered light integrated collection device (SLIC). Susceptibility to a panel of five antibiotics as defined by EUCAST breakpoints were compared. The time to AST result and AST categorical agreement was compared for standard methods and SLIC, any discrepancies were resolved by the EUCAST broth micro-dilution reference method.

**Results:** A total of 505 bacterial-antimicrobial combinations were analysed. A categorical agreement of 95.45% (482/505) was achieved between SLIC and Vitek/disk diffusion. The remaining 23 discrepancies were resolved by broth micro-dilution with 10 AST results agreeing with the SLIC result and 13 in agreement of Vitek/disk diffusion. Thus the overall AST agreement of the standard workflow was 98.01% (495/505) compared to 97.43% (492/505) using SLIC. The mean time for AST was 1.94 + 0.02 h and 10.53 + 0.46 h for SLIC and Vitek respectively. Overall SLIC was calculated to save 25hrs from positive blood culture to AST outcome.

**Conclusion:** SLIC has the capacity to provide AST at the same time as Gram stain or MALDI-TOF identification. This could improve the value of blood culture in clinical practice.

# Presenting Tuesday Evening

Poster No 151

**ABSTRACT WITHDRAWN**



# Presenting Wednesday Evening

Poster No 152

## Application of the Bruker IR Biotyper for Strain Typing During an Outbreak

Jenan Alhasabi<sup>1</sup>, Indran Balakrishnan<sup>2</sup>, Emmanuel Wey<sup>2</sup>

<sup>1</sup>University College London, London, United Kingdom. <sup>2</sup>Royal Free London NHS Trust, London, United Kingdom

### Abstract

#### Background

Molecular typing methods such as whole genome sequencing are relatively time-consuming and expensive. Here we demonstrate the effectiveness of the Bruker IR biotyper in strain typing.

#### Methods

Isolates of multi-resistant Enterobacteriaceae from clinical samples were typed using the Bruker IR Biotyper. The relationships between isolates were analysed using the Bruker IR biotyper software (version 2.1.0.195).

#### Results

On dendrogram analysis, the 13 *E. coli* isolates mostly clustered independently with all 5 replicates. Two isolates (RFH035 and RFH007) clustered together, their replicates spanning across 3 clusters, indicating that they are the same isolate. This was confirmed on Principle Component Analysis (PCA).

Eight *K. pneumoniae* isolates segregated into 7 clusters. Two isolates (RFH033 and RFH006) clustered together initially but separated on the PCA plot.

#### Discussion

RFH035 and RFH007 both came from patients infected with NDM-producing *E. coli*. Their PFGE profiles are indistinguishable. Both patients were admitted to hospital and were on the same ward simultaneously, reflecting the co-clustering seen with the Bruker IR biotyper.

Both RFH033 and 006 were NDM producers, but RFH033 co-produced OXA48. They had almost indistinguishable VNTR profiles with only one difference. This relatedness but difference in resistance profile is reflected in the close relationship seen on dendrogram but separation by PCA seen with the Bruker IR biotyper.

The Bruker IR biotyper is therefore able to reliably demonstrate relatedness and discrimination between strains of *E. coli* and *K. pneumoniae*. This methodology has much faster turnaround times than conventional methodology, and therefore has the potential to inform outbreak management in a more timely manner.

# Presenting Tuesday Evening

## Poster No 153

### **An Assessment of Point-of-Care PCR Testing for the Diagnosis and Management of Meningo-Encephalitis**

Diana Gamio-Izasmendi, Benjamin Cooke

NHS Forth Valley, Larbert, United Kingdom

#### **Abstract**

##### **Background**

Meningitis and Encephalitis are potentially fatal infections. When suspected, empirical treatment is started, and only safely discontinued once excluded. The impact of current CSF investigations is prolonged inpatient stay, and exposure to broad-spectrum antimicrobials. Biofire Filmarray is a point-of-care PCR system. Our aim was to assess time to BioFire result, and its impact on clinical management.

##### **Method**

BioFire was implemented, in addition to current practice, on CSF samples with WCC  $\geq 10$  and all neonatal samples processed between November 2018 and February 2019. Data was collected prospectively for: patient demographics, sampling time, time to result of BioFire and current PCR, antimicrobial regime, and early discharge. Percentage agreement between BioFire and current PCR, mean time to result, percentage cases with reduction in antimicrobials, and mean length of stay for those discharged based on BioFire, were calculated.

##### **Results**

There were 22 samples analysed. There was an 86.4% agreement between BioFire and current PCR. In cases of disagreement, BioFire identified pathogens where standard PCR had not. One sample was insufficient for virology PCR however, a full array was obtained from BioFire. Mean time to BioFire result authorization was 17.8 hours, compared to 316 for virology PCR and 331.2 for bacteriology PCR. BioFire allowed narrowing of antimicrobial therapy in 22.7% of patients, discontinuation in 41.0%, and early discharge in 27.3%.

##### **Conclusion**

BioFire provides comparable diagnosis of meningo-encephalitis faster than current practice. With the current focus on rising bed pressures and antimicrobial stewardship, BioFire allows targeted therapy and safe early discharge where infection is excluded.

# Presenting Wednesday Evening

## Poster No 154

### **Evaluation of molecular rapid diagnosis of enteric bacterial infection in patients with diarrhoeal disease and its clinical and infection control impact at a large district hospital, UK**

Grishma Mehta<sup>1</sup>, Hala Kandil<sup>1,2</sup>

<sup>1</sup>West Hertfordshire Hospitals NHS Trust, Watford, United Kingdom. <sup>2</sup>Faculty of Medicine, Alexandria University, Alexandria, Egypt

#### **Abstract**

##### Introduction:

Acute diarrhoeal syndromes are usually self-limiting, but diagnostic testing and treatment may be required in some instances. Stool cultures require a significant level of technologist expertise and are labour intensive. The BD MAX™ Enteric Bacterial Panel detects over 90% of bacteria causing infectious gastroenteritis and provide rapid diagnosis. The aim of this study is to assess the diagnostic and clinical value of this rapid diagnostic tool.

##### Methods:

Fresh stool samples received from 68 patients were cultured according to SMI methods, and by BD MAX™ Enteric. Further 25 frozen samples were processed by both methods. Any discrepancies between the two methods were sent to reference laboratory for confirmation.

##### Results:

Five samples (4 fresh and one frozen) were excluded from the study due to PCR inhibition. The turnaround time was 48 hours and 4-5 days for negative and positive culture respectively. BD MAX™ Enteric provided same day result. The sensitivity of BD MAX™ Enteric was 100% for fresh samples but this was reduced to 66% if performed on frozen samples. The rapid availability of negative results guided further clinical investigation and management. While the positive results allowed timely implementation of infection control management and guided antibiotic decision process.

##### Conclusion:

BD MAX™ is sensitive and provides same-day results. This allowed implementation of infection control measures in timely manner and guided further patient management. However, as this panel is restricted to bacterial causes of diarrhoea, if PCR there will be a need for further testing to exclude other possible infectious causes

# Presenting Tuesday Evening

## Poster No 155

### From bedside to bench – optimising the local blood culture pathway

Pelumi Popoola, Simon Stoneham, Bethany Davies

Brighton and Sussex Medical School, Brighton, United Kingdom

#### Abstract

##### Background

Optimising the blood culture (BC) pathway is essential to ensure maximal benefits for patients. There are national standards for expected turnaround times. At our acute teaching hospital, there was limited data on this. We aimed to map the local BC pathway to identify obstacles and areas for improvement in the process.

##### Methods

In this prospective study, all BCs taken from adult patients in the Emergency Department (ED) on allocated days over three months were included. Study days were chosen to reflect the whole working week, including out of hours. Information was gathered from multiple stakeholders, including ED clinical staff, porters, microbiology laboratory staff and clinicians. BCs were trailed from when the sample was taken until results were reported. The time taken for each stage was compared against national standards (SMIB37).

##### Results

107 BCs were included in the study. Only 23% achieved the 4hr target between collection and incubation; times ranged from 50 mins–27hrs8mins. None of 43 samples taken at the weekend achieved the target. Process mapping allowed the following problems to be identified: fixed, infrequent transport by porters; delays between the general laboratory and the microbiology receptions; and delay in loading the analyser. BC bottles could not be transported via the vacuum system and the analyser was only accessible when the microbiology laboratory was open, which is not 24/7.

##### Conclusion

The BC pathway at the hospital fails to ensure that national standards are met. Identifying key bottlenecks impeding flow will help enable the trust to make essential changes.

# Presenting Wednesday Evening

## Poster No 156

### Empyema: do we know enough?

Sophie Hatrick, David Arnold, Fergus Hamilton

North Bristol Trust, Bristol, United Kingdom

#### Abstract

##### Introduction

Pleural empyema is an uncommon but serious condition defined by infected fluid in the pleural space. These patients are often given long courses of empirical broad-spectrum antibiotics as the yield from conventional culture methods is notoriously low. The literature shows that with conventional culture methods of the pleural fluid up to 40-60% of causative pathogens remain unidentified. In recent years methods such as DNA analysis have been developed in an attempt to increase identification rates of pathogens. This paper aims to review the literature to determine the additional benefit of DNA analysis methods above conventional culture of fluid in pleural empyema.

##### Methods

A review of the literature searching for studies investigating bacteria present in pleural fluid in patients with empyema was carried out. Studies in which adult patients had a diagnosis of empyema and where conventional culture and molecular methods were used to identify the causative bacteria were included. Descriptive statistics were used to compare the increased yield from molecular methods.

##### Results

Five studies which compared conventional culture techniques and molecular methods for identification of the pathogen in pleural empyema cases were identified. The mean culture-positive rate and molecular-positive rate in these studies was 37.5% (range 10-58%) and 80.0% (range 22.5-82%) respectively. All the studies concluded that molecular techniques provided a greater identification rate than conventional culture techniques.

##### Conclusion

Pleural empyema is often culture negative leading to broad-spectrum antibiotic use. This review shows that molecular methods significantly increase the yield of causative bacteria present in pleural fluid.

# Presenting Tuesday Evening

## Poster No 157

### Evaluation of Microbiological Sampling Practice in Community Acquired Pneumonia at a South London Trust: The Cheaper, the Better?

Andrew Owusu-Agyei, Shantanu Kundu, Anna Goodman

Guys and St. Thomas' Hospital, London, United Kingdom

#### Abstract

NICE guidelines suggest cases of community acquired pneumonia (CAP) in hospital have blood and sputum cultures and legionella and pneumococcal antigen tests be considered in specific cases. Local guidelines advise respiratory viral swabs, sputum and blood culture in specific cases and urinary antigen tests only in severe cases. We assessed the frequency and appropriateness of microbiological testing in CAP.

#### Methods:

The electronic records of admissions to St Thomas' Hospital, London in January 2019 were scrutinised to identify cases of CAP. The severity of each case was categorized using CRB65 scoring. Microbiological tests and their results were analysed.

#### Results:

64 cases of CAP were identified. Severe disease (CRB $\geq$  2) was present in 31%. Respiratory viral/flu swabs were sent in 76% of cases and were positive in 39% of these cases [12 (63%) were influenza]. Sputum culture was collected in 39% of cases and revealed pathogens in 24% of these. Urinary pneumococcal antigen was sent in 7 cases of non-severe disease and 1 case of severe disease and was positive in 25% of those tested. Legionella urinary antigen tests were sent in 6 cases, only 2 of whom had reasons documented for sending the test; all were negative. Blood cultures were sent in 69% of cases (44 patients) and none revealed pathogens.

#### Discussion:

During the influenza season the most useful microbiological test was the respiratory viral swab. Sputum culture is a cheap test that could be used more often. Expensive legionella antigen tests were performed inappropriately.

# Presenting Wednesday Evening

## Poster No 158

### Validation and Implementation of the Roche FLOW System in a Large Routine Molecular Diagnostic Laboratory

Steve Wilson, Helen Kirk-Granger, Hannah Tanner, Clare Overton Lewis, Daina Ratcliffe, Judith Workman  
PHE Public Health Laboratory, Birmingham, United Kingdom

#### Abstract

##### Background –

The PHE Public Health Laboratory, Birmingham at Heartlands hospital has an annual turn-over in excess of 750,000 specimens, 41,000 of which are processed using real-time PCR in the molecular section. In 2017, due to the age of existing instrumentation, the laboratory began a programme of replacement.

##### Methods –

During 2017-19 the entire molecular service was replaced with a new high-throughput automated Roche FLOW system, consisting of a primary sample handler (PSU), two MagNA Pure 96 instruments, a PCR set-up unit (PSU), three 384-well LightCycler 480 II instruments and overarching FLOW software responsible for automated data handling, specimen tracking and workflow between the instruments.

##### Results –

The bulk of the in-house developed assay repertoire, representing 34 viral, bacterial and fungal targets was re-optimised in 19 multiplexes. These were fully validated against existing molecular tests and were introduced into routine diagnostic service in June 2018. The FLOW software was successfully interfaced with the LIMS system, allowing rapid two-way communication of test requests and results. Over the following ten months, the service was expanded with an additional seven targets. The new system and assays were audited by UKAS in April 2019 and achieved accreditation to ISO:15189:2012 in August 2019.

##### Conclusion –

The Roche FLOW system was successfully validated and introduced into routine diagnostic service and now offers significant improvements in assay performance, sample throughput and turnaround time. Details of the validation process, post-implementation modifications, trouble-shooting and lessons learnt will be of value to other diagnostic laboratories considering the introduction of this technology.

# Presenting Tuesday Evening

Poster No 159

## MODERNISING RESPIRATORY DIAGNOSTICS: THE IMPACT OF BIOFIRE FILMARRAY PNEUMONIA PANEL PLUS AND RESPIRATORY PANEL ON THE DETECTION OF VIRUSES AND ATYPICAL BACTERIA

Debbie Wearmouth, Phillipa Burns

Hull University Teaching Hospitals, Hull, United Kingdom

### Abstract

#### BACKGROUND

The incidence of pneumonia is high within our local patient population and it is a significant cause of morbidity and mortality. The adoption of rapid molecular technology enables targeted clinical interventions and the initiation of appropriate antimicrobial and antiviral therapy.

#### METHOD

From February 2019, all lower respiratory samples submitted for microbiological analysis were examined to assess if a Pneumonia FilmArray would be a suitable investigation; indications for testing included radiological evidence of pneumonia or relevant clinical information suggesting atypical infection. Nasal pharyngeal swabs could be requested by clinicians across the hospital based on presenting signs and symptoms.

#### RESULTS

In total 883 nasal pharyngeal swabs and 175 lower respiratory tract samples from 927 patients were tested, 514 positive results were obtained; 450 from nasal pharyngeal swabs and 64 from lower respiratory tract samples.

Notably, two *Bordetella pertussis* and two *Legionella pneumophila* and five *Mycoplasma pneumoniae* were detected. One of the *Bordetella pertussis* was confirmed by culture, 9 days after the molecular result and the other case was detected in a neutropenic adult within an oncology, enabling rapid infection control intervention. Both *Legionella* cases were confirmed with urinary antigen testing, however neither grew on culture.

#### CONCLUSION

FilmArray technology enables the rapid identification of the causative agents of viral and atypical pneumonia, it is a useful adjunct to traditional testing and it enables rapid clinical and infection control intervention.



# Presenting Wednesday Evening

Poster No 160

## In-house azithromycin MIC estimation by gradient strip in *Salmonella enterica* var Typhi and Paratyphi: Do you believe it?

Jennifer Goldblatt<sup>1</sup>, Andrew Ward<sup>2</sup>, Martin Day<sup>3</sup>, Gauri Godbole<sup>3,1</sup>, Stephen Morris-Jones<sup>1</sup>

<sup>1</sup>University College Hospitals NHS Foundation Trust, London, United Kingdom. <sup>2</sup>The Doctors Laboratory, London, United Kingdom. <sup>3</sup>Public Health England, London, United Kingdom

### Abstract

#### Background:

Dependence upon azithromycin in the treatment of enteric fever is increasing, particularly with the emergence of *Salmonella typhi* strains with extended spectrum  $\beta$ -lactamase activity and the already high prevalence of quinolone resistance. Accurate determination of azithromycin susceptibility is crucial and underlined by recent reports of azithromycin resistance. We investigated concerns of discordance in azithromycin susceptibility estimation between local and reference laboratories.

#### Methods:

Retrospective audit of isolates from patients attending a central London hospital with enteric fever (May 2011-April 2019). Estimations of azithromycin and ciprofloxacin MICs by the local and reference laboratories were compared. Genomic data and laboratory practices were reviewed.

#### Results:

In isolates with matched clinical and reference laboratory MICs (n=19), there was poor inter-laboratory concordance: 5/19 MICs concordant (weighted  $\kappa = 0.190$ , adjusted for concordance within 1 log<sub>2</sub> dilution); susceptibility interpretation concordant in 8/19 ( $\kappa=0$ ). All isolates reported locally as resistant were found to be sensitive by the reference laboratory. No azithromycin resistance genes were detected. By contrast, for ciprofloxacin: 13/18 MIC gradient strip results concordant (weighted  $\kappa=0.823$ ); susceptibility interpretation concordant in 17/18 ( $\kappa=0.85$ ). Of the possible sources of variation identified, we believe that variable interpretation of “trailing edge” MIC estimation was key, mitigated in the reference laboratory by a “second reader” system.

#### Conclusions:

There is marked variation in azithromycin MIC gradient strip reporting between a local laboratory and the national reference laboratory, particularly over-reporting of resistance by the local laboratory. We would advise clinical laboratories to review their experience and consider adopting a “second reader” system.

# Presenting Tuesday Evening

## Poster No 161

### Nucleic acid amplification tests (NAATs) for diagnosing sexually transmitted infections (STIs): NHS Grampian (NHSG) experience

Chathuri Gunasekera<sup>1,2</sup>, Noha El Sakka<sup>1</sup>, Isabel Cook<sup>1</sup>, Ambreen Butt<sup>3</sup>

<sup>1</sup>Aberdeen Royal Infirmary, Aberdeen, United Kingdom. <sup>2</sup>University of Colombo, Colombo, Sri Lanka. <sup>3</sup>Aberdeen Community Health Village, Aberdeen, United Kingdom

#### Abstract

##### Background:

We present 2 studies conducted on *Chlamydia trachomatis*(CT) and *Trichomonas vaginalis*(TV) testing in NHSG, leading to streamlining of NAATs of *Neisseria gonorrhoeae*, CT and TV in triplex.

##### Methods:

Formerly, positive CT-NAATs needed confirmation by repeat testing on the same sample using same platform. According to SMI guidelines, when confirmatory testing results are consistently concordant following audit, confirmation may be unnecessary. CT testing over 3 years (2015-2017) was analysed to review outcomes of confirmatory testing.

A pilot study was conducted on TV-NAAT testing in comparison with TV-microscopy. In addition, TV testing data over 30 months (29/07/2016-31/01/2019) was analysed.

##### Results:

A total of 88533 samples were tested for CT-NAAT over 3 years: 7059 were positive, 914242 negative. A total of 153 were equivocal (initially positive, negative on repeat) which were reanalysed with results on receipt of repeat samples. Over the years, percentage of equivocal tests out of the total positives remained at 0.2%; rates for positive-repeats and tests-not-repeated fluctuated; negative-repeats increased from 18 to 38.

TV-NAAT was more sensitive/ specific compared to TV-microscopy (relative specificity was 99.6%, relative sensitivity was 92.8%), and was adopted for routine testing. A total of 44407 samples were tested for TV NAATs over 30 months. Of this, 433 were positive and 43796 negative. Further cross-sectional analyses were done.

##### Conclusions:

We concluded that positive CT-NAATs do not require repeat testing for confirmation. TV-NAAT testing proved more sensitive/specific than TV-microscopy and was useful to adopt as routine testing and help streamlining testing on one molecular platform.

# Presenting Wednesday Evening

Poster No 162

## MODERNISING RESPIRATORY DIAGNOSTICS: THE CLINICAL IMPACT OF BIOFIRE FILMARRAY PNEUMONIA PANEL PLUS ON THE DETECTION OF PNEUMONIA

Phillipa Burns, Debbie Wearmouth

Hull University Teaching Hospitals, Hull, United Kingdom

### Abstract

The incidence of pneumonia is high within our local patient population and it is a significant cause of morbidity and mortality; improving the diagnostic tests available for acute admissions and intensive care patients enables rapid clinical intervention.

### METHOD

All results from February to May 2019, were reviewed to assess the impact of the lower respiratory (Pneumonia Plus) FilmArray Panel.

The BioFire Pneumonia Panel identifies 33 clinically relevant targets from sputum (n=48) and bronchoalveolar lavage (n=5) samples. For 15 of the bacteria, the BioFire Pneumonia Panel provides semi-quantitative results, which may help determine whether an organism is a coloniser, part of a polymicrobial infection.

### RESULTS

The patient cohort age ranged from 10 months to 89 years of age; with an average age of 58.3 years. The most commonly documented clinical information on the requests was pneumonia (42%) other respiratory indications such as respiratory failure, abscess or cavitation accounted for a further 38%.

36% of isolates were positive for a virus (Coronavirus =3, Influenza A = 7, HMPV =3, RSV =1 and Rhino/Enterovirus =3) with 26% also positive for a bacterial species. The majority of samples were polymicrobial (25%) with 38% negative for any bacterial species within the panel. The incidence of co-infection was seen in 23%, most often with Influenza A.

### CONCLUSION

FilmArray technology enables a syndromic assessment of the microbiota of the lower respiratory tract in an accessible format that enables the rapid identification of viral and bacterial co-infection for a complex patient population.

# Presenting Tuesday Evening

## Poster No 163

### **The Reliability of C-Reactive Protein Levels in Predicting Dengue Severity: A Systematic Review**

Vincci Monique Salud, Francis Andrew Reyes, Jaymelyn Ricohermoso, Lou Erika Rubion, Arthur Dessi Roman

Manila Doctors Hospital, Manila, Philippines

#### **Abstract**

##### **Background**

Clinical manifestations of dengue vary from mild febrile illnesses to shock and organ failure. However, severe symptoms may not be clinically evident immediately, making it difficult for early detection of patients at risk for poor outcomes. Several biomarkers, particularly C-reactive protein (CRP), were revealed to be highly predictive of dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS). This systematic review aims to determine a relationship between CRP levels and the probability of developing DHF/DSS.

##### **Methods**

Multiple electronic databases were searched for English literature from January 2007 to August 2017. Four reviewers independently extracted data from eligible studies using the standardized critical appraisal tool from JBI-MAStARI. Articles that scored six and above were included.

##### **Results**

Three cohort and two cross-sectional studies were reviewed. Sample sizes ranged from 70 to 235 participants. The cohort studies measured CRP levels at point of diagnosis, but were re-measured at different time points in the subjects' admission. However, regardless of the time difference, they all showed that increased CRP levels exhibited a trend towards development of DSS/DHF. The studies also identified a possible "golden period" for measuring CRP levels that can accurately predict development of DHF/DSS. The cross-sectional studies also saw a similar trend, but have measured this in median values of the CRP levels.

##### **Conclusion**

This systematic review showed that increased CRP levels appeared to have a trend towards a higher probability of developing DHF/DSS. A larger population and more studies are needed to further establish a statistically significant relationship.

# Presenting Wednesday Evening

## Poster No 164

### Improved antibiotic stewardship, Reduced Length of Stay and Rapid testing for Meningitis

Dina El-Zimaity, Manjula Natarajan, Maria Ntoumpanaki

Kettering General Hospital, Kettering, United Kingdom

#### Abstract

##### Background:

BIOFIRE FILMARRAY PCR test is a rapid diagnostic test to detect bacteria and virus in meningitis/encephalitis which can give results within 70 minutes. We aimed to review samples received in the laboratory and its effect on treatment and discharge.

##### Method:

Cerebrospinal fluid (CSF) samples received in the laboratory between 1<sup>st</sup> July 2017 – 19 September 2018 were reviewed. Medical notes, admission and discharge dates, turnaround time, CSF white blood cells (WBC), 30 day mortality, costs and saving were reviewed.

##### Results:

623 CSF samples were received in the laboratory during 14.5 month period. Criteria to do PCR was WBC >10, or clinical reasons. 94 samples (15%) were tested by PCR, of which 44 (46%) had PCR due to clinical reasons, and 50 samples WBC >10 (54%) had PCR.

16 samples overall (17%) were positive by PCR. A control group was set up from negative PCR cohort (16 patients).

Commonest pathogen detected was Enterovirus detected in 8 (50%) samples, followed by Herpes simplex in 3 (19%), and Varicella zoster in 3 (19%), Neisseria meningitides and Streptococcus pneumonia were detected in 1 (6%) sample each.

Treatment was terminated in eight patients and discharged (Enterovirus detected), and rationalised in five once results were available. The average length of stay was 7.8 days for positive group (2.6 for enterovirus, 11 for HAV, VZV).

The average turnaround time 10.5 hours. Each Filmarray tests costs £153 as opposed to acute medical bed cost of £360/day.

##### Conclusion:

Filmarray improved antibiotic stewardship, reduced LOS and enhanced patient experience

## Presenting Tuesday Evening

# Final category: Medical mycology and fungal infections

Poster No 165

### The Accuracy of 1,3-B-D-glucan testing in diagnosing Fungal Infections: A comparison of high-risk groups within the ICU setting

Jan Chang<sup>1</sup>, Fergus Hamilton<sup>2,1</sup>

<sup>1</sup>university of bristol, bristol, United Kingdom. <sup>2</sup>NHS North Bristol Trust, bristol, United Kingdom

#### Abstract

1,3-B-D-Glucan [BDG] is found in the cell wall of most fungi species and BDG testing is currently used as an adjunct for diagnosing fungal infections in immunocompromised patients. Guidelines on use of BDG testing is still unclear due to uncertainties on its reliability as a diagnostic tool. We aimed to determine the accuracy of BDG testing for diagnosing fungal infections and observed general patient demographics for those more at-risk of infection within the ICU setting. A case control study was carried out on 158 patients who had BDG tests requested in UH Bristol. This was further divided into 69 positive BDG result group and 89 negative BDG result control. Patient BDG results were compared to gold standard diagnostic criteria of positive signs on CT scans, BAL PCR and Blood or sputum cultures to confirm presence of fungal infection. Control group implied negative BDG test results consistent with negative gold standard diagnostic testing results in order to determine true negative cases. We determined BDG to have Sensitivity of 89.2%, Specificity of 66.9%, Positive predictive value of 36.3% and Negative Predictive value of 97.8%. Majority of ICU patients affected by fungal infections requiring BDG testing included stem cell transplant, neutropenic, GI surgical and Haematology admissions. In conclusion, BDG has a large Negative Predictive Value and is a good test to use in excluding fungal infections. However, it has limited sensitivity and positive BDG is not helpful in confirming presence of fungal infections.

# Presenting Wednesday Evening

Poster No 166

## Biofilm profile of *Candida* isolated from clinical specimens at a Tertiary Care hospital in India

Arghadip Samaddar, Uma Tendolkar, Sujata Baveja  
Lokmanya Tilak Municipal Medical College & General Hospital, Mumbai, India

### Abstract

**Introduction** *Candida* species are a leading cause of infections in immunocompromised hosts. Usage of indwelling medical devices provides ample opportunity for *Candida* biofilms to set up a nidus for infection that is not easily amenable to conventional antifungal therapy.

**Materials and Methods** A total of 100 *Candida* isolates from patients with suspected candidiasis were tested for production of biofilm. Based on clinical history, 62% of the patients were found to have clinically significant infection with *Candida* while in 38% of the patients, *Candida* isolates represented commensals. Biofilm production was detected and graded by visual (test tube) and spectrophotometric (microtiter plate) methods.

**Results** Fifty five percent of the *Candida* isolates produced biofilm. Biofilm producing abilities of clinically significant isolates (80%) was found to be significantly higher than commensals (20%). Biofilm positive *Candida* isolates were most commonly obtained from blood (34.5%). Biofilm production in non-*albicans Candida* (67.9%) was found to be significantly higher than *C. albicans* (38.6%). Majority of the biofilm positive *Candida* isolates produced Grade 2 (moderate) biofilm. *Candida tropicalis* accounted for maximum biofilm production comprising 20% Grade 4, 53.8% Grade 3 and 50% Grade 2 biofilm. Concordance in grading between the two methods was observed in 72.7% of the isolates. Spectrophotometric method was found to be more sensitive than visual method for detection of *Candida* biofilm.

**Conclusion** The importance of studying *Candida* biofilms is to ascertain new therapeutics and techniques to manage these infections clinically and improve the outcome as these are associated with high morbidity, mortality and resistance to antifungal drugs.

# Presenting Tuesday Evening

## Poster No 167

### **Pulmonary infection due to *Acrophialophora fusispora* in a patient with underlying mixed connective tissue disease and chronic pulmonary aspergillosis**

Arghadip Samaddar, Anuradha Sharma

All India Institute of Medical Sciences, Jodhpur, Jodhpur, India

#### **Abstract**

#### **Background**

*Acrophialophora fusispora* is an emerging opportunistic fungus rarely implicated in human infections. Here, we report the first case of pulmonary infection due to *A. fusispora* from India.

#### **Case Description**

A 59-year-old male, farmer by occupation was admitted to AIIMS, Jodhpur, Rajasthan, India, with complaints of cough and expectoration of yellowish sputum for last one month and gradually progressive shortness of breath for 20 days. He had past history of pulmonary tuberculosis and was a known case of COPD for last five years. He was diagnosed with mixed connective tissue disease (MCTD) for which he had been receiving treatment with azathioprine and prednisolone for 3 months. CECT of chest revealed cystic bronchiectatic changes with findings suggestive of aspergilloma. Serum *Aspergillus fumigatus* specific IgG levels were elevated suggestive of chronic pulmonary aspergillosis (CPA). He was tested positive for influenza A (H1N1) by RT-PCR and received treatment with oral oseltamivir but to no clinical benefit. Culture of sputum on two subsequent occasions showed growth of a fungus which was identified as *Acrophialophora fusispora* based on characteristic microscopic morphology and rDNA ITS sequencing. Treatment with oral itraconazole showed marked symptomatic improvement. He was discharged from the hospital with oral itraconazole to be continued for 6 months. Follow-up visit after 3 months showed significant clinical and radiological improvement.

#### **Conclusion**

Molecular sequencing can reliably identify *A. fusispora* which is crucial for initiating specific antifungal therapy. Further studies are encouraged to determine the prevalence of such infections so as to plan optimal management and improve patient outcomes.



# Presenting Wednesday Evening

## Poster No 168

### Real-world experience with Isavuconazole therapy in a large tertiary hospital in Cambridge, UK

David Enoch<sup>1</sup>, Netta Tyler<sup>2,3</sup>, Christianne Micallef<sup>2</sup>, Vanessa Wong<sup>2</sup>

<sup>1</sup>Clinical Microbiology & Public Health Laboratory, Cambridge, United Kingdom. <sup>2</sup>Cambridge University Hospitals, Cambridge, United Kingdom. <sup>3</sup>NHS-England, Cambridge, United Kingdom

#### Abstract

**Background:** Isavuconazole (ISV) is a second-generation triazole antifungal used for invasive fungal infections (IFIs). Here, we describe our experiences of ISV.

**Methods:** This single-centre retrospective study included all patients who commenced a course of ISV over a 3-year period (1/7/16-30/6/19). ISV was used for the treatment of IFIs when no alternative was suitable. Demographics, clinical details and antimicrobial history were obtained from our integrated electronic health record and laboratory system (EPIC).

**Results:** Twenty-four patients, aged between 17–78 years (median 54), received ISV in the study period. Sixteen (67%) were haematology patients. Using EORTC criteria, six had possible invasive aspergillosis (IA), 1 had a possible yeast infection, 13 had probable IA, 3 had proven IA and one had a proven yeast infection. Four were neutropenic (neutrophil count  $<0.5 \times 10^9/L$ ) and 7 had renal impairment. Half of the patients (12/24; 50%) had received a transplant prior to commencing (nine allografts, one kidney, one lung, one multi-visceral) and a further two underwent an allograft whilst receiving ISV. ISV pre-dose levels ranged from 1.29–7.7mg/L (median 2.73mg/L; IQR 2.1 – 3.13mg/L). ISV was given for 1–733 days (median 42 days). In patients who were still alive during therapy, the treatment duration ranged from 3–342 days (median 97 days). Ten were dead within 42-84 days of commencing therapy; 6 had died by the end of therapy.

**Conclusion:** Our findings suggest that ISV is used infrequently, predominantly in haematology. More data is needed to determine optimal treatment course and the role of therapeutic drug monitoring.

# Presenting Tuesday Evening

## Poster No 169

### Positive Serum (1,3)- $\beta$ -D-Glucan Testing in Surgical Patients across the Bristol Area

Sam Hodgson<sup>1</sup>, Fergus Hamilton<sup>2</sup>, Kim Jacobson<sup>2</sup>

<sup>1</sup>University of Birmingham, Birmingham, United Kingdom. <sup>2</sup>North Bristol NHS Trust, Bristol, United Kingdom

#### Abstract

##### Background:

An evidence gap exists in anti-fungal diagnostic practice following abdominal surgery, especially when compared to haem-oncology counterparts. In light of the recent Anti-fungal Stewardship CQUIN, our study addresses the utility of serum (1,3)- $\beta$ -D-Glucan (BDG) testing post-gastrointestinal surgery.

##### Method:

We identified positive BDG results ( $\geq 80$ pg/mL) on ITU and surgical wards in 3 major institutions in the Bristol area. Those with a 'history of abdominal surgery  $\leq 30$  days previous' were identified using electronic health records. Other variables included number of days from surgery to testing, value of the result, and past medical history.

##### Results:

110 patients with positive results were identified. 19 (17.3%) of these had a history of abdominal surgery. By surgical type, 6 (31.6%) had major abdominal surgery. 6 (31.6%) had pancreatic surgery and 5 (26.3%) small bowel resection. 2 had other types of surgery. The mean BDG score was 286pg/mL. 1 patient had risk factors other than gastrointestinal surgery for a positive BDG result.

Only 1 patient died within 28 days. Patients tested between 0-9, 10-19 or 20-30 days of surgery had mean BDG scores of 329pg/mL, 302pg/mL and 390pg/mL respectively. 40% were tested within 9 days of surgery. There was no clear evidence of invasive fungal infections.

##### Conclusion:

Positive BDG testing is common after surgery, but does not appear to be associated with a significant mortality burden. Ensuring appropriate anti-fungal therapy is essential for treatment, risk reduction and cost containment. More research is needed to identify appropriate testing strategies in patients with abdominal surgery.

# Presenting Wednesday Evening

## Poster No 170

### **Candida auris exhibits resilient biofilm characteristics in vitro: implications for environmental persistence**

Bryn Short<sup>1,2</sup>, Christopher Delaney<sup>2</sup>, Leighann Sherry<sup>2</sup>, Ryan Kean<sup>3</sup>, William MacKay<sup>1</sup>, Craig Williams<sup>1</sup>, Gordon Ramage<sup>2</sup>

<sup>1</sup>University of the West of Scotland, Paisley, United Kingdom. <sup>2</sup>University of Glasgow, Glasgow, United Kingdom. <sup>3</sup>Glasgow Caledonian University, Glasgow, United Kingdom

#### **Abstract**

In the decade since its discovery, *Candida auris* has rapidly become a serious problem within healthcare environments. This fungal pathogen readily colonises skin and is responsible for numerous hospital outbreaks in different continents presenting high morbidity and mortality rates. However, the mechanisms it uses to spread throughout nosocomial settings still remains enigmatic. *C. auris* biofilm formation was monitored in real-time and the transcriptome of these biofilms were identified using RNA-sequencing and the ability of *C. auris* to persist on a polymer surface and tolerate treatment with a commonly used disinfectant in sodium hypochlorite (NaOCl) was assessed. Contrary to previous findings, *C. auris* biofilms were found to be heterogeneous and not dependent on cell phenotype. Through transcriptomic analysis and assigning transcripts into GO terms, a large number of genes involved in cell components, specifically fungal cell wall and cell membrane. Genes involved in these components were also up-regulated in dry biofilms of aggregating fungal cells compared to their single-cell counterparts. Aggregating *C. auris* biofilms were able to persist and tolerate disinfectant treatments more successfully than single-cell biofilms. These findings show that the aggregating phenotype of *C. auris* likely helps drive its survival and spread throughout hospital wards during outbreaks. Nonetheless there are still caveats in our understanding of *C. auris* biology and filling these holes will help in the development of more effective decontamination and infection control protocols for this emerging and deadly pathogen.

# Presenting Tuesday Evening

## Poster No 171

### **Voriconazole – are we doing what we think we are? A review of voriconazole use and monitoring in respiratory patients in a London hospital**

Germaine Chia, Frances Davies, Meg Coleman

Imperial College Healthcare NHS Trust, London, United Kingdom

#### **Abstract**

##### **Background**

Voriconazole is increasingly used in treatment and prophylaxis of respiratory fungal infections, but therapy carries a risk of significant side effects. Outpatient therapy has additional challenges for ensuring pre-treatment counselling of patients and fulfilling therapeutic drug monitoring (TDM) requirements. A review of local practice was performed.

##### **Methods**

Electronic patient records for adult Respiratory outpatients on voriconazole from November 2005 to January 2019 were retrospectively reviewed. Data was collected on patient demographics, pre-treatment counselling and TDM. Based on the results, targeted interventions were proposed.

##### **Results**

21 patients commenced voriconazole between 2005 and 2019, majority (n=10/21, 47.2%) for chronic pulmonary aspergillosis. Of the 21 patients, counselling was variable regarding the risks of hepatotoxicity (12, 57.1%) and phototoxicity (13, 61.9%), signs indicating hepatotoxicity (6, 28.6%) and phototoxicity (11, 52.4%), and taking photo-protective precautions (13, 61.9%). 60% (n=12/20) of patients had liver function tests measured weekly in their first month of commencing treatment, while phototoxicity was reviewed in only 10% (n=2/20) of patients at follow-up appointments. In 57.1% of patients (n=12/21), none of the 3 checklists available (HCP checklist and 2 local proformas) were used when commencing treatment.

##### **Conclusion**

Our findings revealed a lack of consistency in information given to patients, documentation by clinicians, and in TDM, in spite of the existing checklists available. We propose an individual written management plan to empower patients to manage their treatment and guide clinicians in pre-treatment counselling and subsequent follow up of patients. A re-audit is planned for 6 months to assess the efficacy of this intervention.

# Presenting Wednesday Evening

## Poster No 172

### North by Northeast - a case of CNS Aspergilloma mistaken for pituitary tumour

Vino Srirathan, Uli Schwab

Newcastle University Teaching Hospitals, Newcastle-Upon-Tyne, United Kingdom

#### Abstract

##### Background

Fungal pituitary sellar infection is a rare condition and can resemble a pituitary tumour. Our patient required two debridements across two continents.

##### Case

A 47-year-old diabetic man presented with history of headaches and sudden visual loss, on neuroimaging found to have an infiltrative sella lesion compressing the optic nerves. He had an incomplete transsphenoidal resection in Nigeria, with a histological diagnosis of chordoma. Ten months prior he suffered a gunshot wound destroying his femur, initially managed with an intramedullary nail, subsequently requiring implant removal, multiple debridements antibiotic spacer, ultimately leading to a Girdlestone's. Endoscopic redo-transsphenoidal-resection at Newcastle-Upon-Tyne, for cystic/solid inflammatory changes in the pituitary fossa/sphenoid-sinus/suprasellar-cisterns suggestive of residual tumour, however did not show any neoplasm. Instead, histology yielded a chronic necrotising fungal infection, morphologically suggestive of Aspergillus on Grocott/PAS-stains, with septate branching hyphae and fruiting bodies. Culture and 18s PCR of sphenoid tissue was negative. Good therapeutic response to longterm voriconazole therapy with TDM confirming adequate levels >2 mg/L, and hormone substitution for pan-hypopituitarism. He underwent further 2-stage-arthroplasty of the hip due to polymicrobial bacterial osteomyelitis but negative fungal cultures/histology.

##### Discussion

Aspergillus infection of the pituitary fossa is rare and a recognised mimic of macroadenoma/tumour. The original lesion is likely to have been aspergillus, with diabetes as a well-established risk factor for primary paranasal fungal infection, rather than iatrogenic inoculation during surgery. Radiological/microbiological features from Girdlestones' pointed against haematogenous spread from the osteomyelitic hip.

# Presenting Tuesday Evening

Poster No 173

## An Uncommon Infection in Common Variable Immunodeficiency

Nicholas Wong<sup>1</sup>, Arthur Price<sup>2</sup>, Daniel Pan<sup>1</sup>, Amandip Sahota<sup>1</sup>

<sup>1</sup>Department of Infectious Diseases and Tropical Medicine, Leicester Royal Infirmary, University Hospitals of Leicester NHS Trust, Leicester, United Kingdom. <sup>2</sup>Clinical Immunology, Leicester Royal Infirmary, University Hospitals of Leicester NHS Trust, Leicester, United Kingdom

### Abstract

*Cryptococcus neoformans* can cause life-threatening disease in both immunocompromised and healthy patients. We report a case of cryptococcal meningoencephalitis in a 68-year-old patient with a history of common variable immunodeficiency due to a NFKB1 gene mutation and indeterminate colitis.

Our patient was admitted following a fall where he fractured his left humerus. During his admission, a persistent fever was noted despite broad spectrum antibiotic therapy. His neurological condition deteriorated over four weeks, with impaired cognition progressing to aphasia and obtundation. Following initial concerns over an ischaemic stroke, he was found to be serum cryptococcal antigen positive, and subsequent cerebrospinal fluid analysis confirmed CNS cryptococcosis by culture. His neurological condition improved with combination of liposomal amphotericin and flucytosine and he is currently undergoing rehabilitation.

The NFKB1 mutation is associated with common variable immunodeficiency and hypogammaglobulinaemia. Our patient was on weekly subcutaneous immunoglobulin replacement, but also required long term glucocorticoids (prednisolone 20mg daily) to control his colitis.

To our knowledge, this is the first description of cryptococcal meningoencephalitis in a patient with the NFKB1 mutation. Cryptococcal disease is an important differential diagnosis in immunosuppressed patients with fever and neurological symptoms and full recovery is possible with prompt recognition and treatment.

# Presenting Wednesday Evening

## Poster No 174

### Unaccountable use of systemic antifungal treatment leads to change in guidelines and stewardship in a district general hospital

Kate David, Trupti Patel, Ai-nee Lim, Michael Kelsey

#### Background

Antifungal resistance is a global emergency of increasing prevalence, yet only 11% of NHS Trusts have an antifungal stewardship programme. Given the high mortality and cost associated with invasive fungal infections, it is paramount to optimise investigations and judicious use of systemic antifungals. Hospital guidelines often focus on empirical treatment, omitting diagnostics.

#### Methods

Patients prescribed systemic antifungals were identified using pharmacy records over a 1 year period in a district general hospital in London. Electronic patient records were interrogated for microbiological, serological, histopathological and radiological investigations based on national recommendations. Audit standards were designed to meet the NHS England Medicines Optimisation and Stewardship CQUIN.

#### Results

31 adult patients were identified. Microbiological evidence of fungal infection was demonstrated in 16/31 patients (52%). 63% were speciated and 47% underwent susceptibility testing. Three patients had beta-D-glucan tests; two patients had histopathological testing; 19 patients underwent imaging, of which 42% were reported as consistent with possible fungal infection.

#### Conclusion

9 (29%) patients had no obvious indication for antifungal treatment. Systemic antifungal treatment is not without toxicity and cost and contributes to resistance. In view of this, we updated the hospital guideline to include a guide to diagnostics, incorporated antifungals into our antimicrobial stewardship ward round and submitted this audit to NHS England CQUIN. Further work will evaluate whether these changes impact upon current practice.

#### References

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# Presenting Tuesday Evening

## Poster No 175

### The Prevalence of Fungal Pathogens among the Positive Blood Culture Specimens in a Clinical Microbiology Laboratory of a Tertiary Institution, Uganda.

Beatrice Achan<sup>1</sup>, Anyidu Benson<sup>2</sup>, David Meya<sup>3</sup>, David Kateete<sup>2</sup>

<sup>1</sup>Makerere University Department of Medical Microbiology, Kampala, Uganda. <sup>2</sup>Makerere University Department of Immunology and Molecular Biology, Kampala, Uganda. <sup>3</sup>Makerere University Department of Internal Medicine, Kampala, Uganda

#### Abstract

##### Background.

The global burden of fungal diseases is approximately, 1 billion. Fungal bloodstream infections are the fourth commonest nosocomial bloodstream infection with an attributable mortality rate which can approach 50 %. A significant contributing factor to the high mortality rate is missed diagnosis. In the clinical microbiology laboratory (CML), the bacterial blood culture bottles are routinely used for the recovery of all bloodstream pathogens. However, in our CML, the standard operating procedures does not include the use of fungal isolation media for sub-culture of positive blood culture specimens. Therefore, in this study, we aimed to estimate the prevalence of fungal pathogens among the positive blood culture specimens in the CML, Makerere University.

##### Methods.

Positive blood culture specimens (n =110) by automated BACTEC 9120 were sub-cultured on Sabouraud dextrose agar (SDA) plus chloramphenicol. The isolates were purified and identified using the conventional morphological and biochemical tests. Briefly, yeasts were identified by India ink, germ tube tests and chlamydospore formation, ChromCandida agar, urease and sugar assimilation tests. Molds were identified by colonial morphological characteristics on SDA and lactophenol cotton blue stain.

##### Results.

The prevalence of fungal pathogens in the blood culture positive specimens was 4 %. Yeasts were more prevalent than molds (3/4; 75 %). The species that were isolated included *Candida albicans* (2/4; 50 %), *Candida tropicalis* was (1/4; 25 %) and *Aspergillus fumigatus* (1/4; 25%).

##### Conclusion.

There is a high prevalence of *Candida* non-albicans species among the positive blood culture specimens in the clinical microbiology laboratory, Makerere University.



# Presenting Wednesday Evening

Poster No 176

## Implementation of Posaconazole Therapeutic Drug Monitoring

Niall Jackson, Lucy Rivett, Netta Tyler, David Enoch  
Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

### Abstract

**Introduction** Posaconazole is a broad-spectrum triazole agent, licenced for prophylaxis against fungal infections in a subset of haematology patients. Many centres have implemented the British Society for Medical Mycology guidelines for therapeutic drug monitoring (TDM).

We performed a retrospective study to assess the application of posaconazole TDM, in a stem cell transplant unit.

**Method** Electronic records of patients receiving posaconazole over a one-year period were reviewed. TDM levels were performed in the Mycology Reference Laboratory, Bristol.

**Results** 88 patients were identified; 88.6% (78/88) received posaconazole for prophylaxis. 97% (76/78) had TDM. 149 posaconazole levels were taken. Four (2.6%) levels were from patients who received suspension, rather than tablet formulation. All 4 levels were sub-therapeutic. 69.1% (103/149) of levels were within or above reference ranges provided. Of sub-therapeutic levels 84.2% (38/149) did not result in a dose change. 25% (22/88) of patients stopped posaconazole due to side effects. Nine (10.2%) patients developed infections despite adequate posaconazole prophylaxis.

**Discussion** We exhibited excellent adherence to national guidelines. We question the utility of global posaconazole TDM. Since national guidelines were written, tablet rather than suspension formulations are routinely used; suspensions exhibit higher variable bioavailability (evidence supported by this study).

In those with sub-therapeutic levels (n=38) 6 resulted in change and no remaining patients (n=32) developed invasive fungal infections. TDM did not predict who would develop disseminating infection.

We would advocate the use of TDM in a subset of patients including those receiving suspension formulation, but the benefit of TDM for all is not clear.

# Presenting Tuesday Evening

## Final category: Pathogenicity

Poster No 177

### Coinfection Mechanisms of *Campylobacter* and *Escherichia coli* in Human and Chicken Epithelial cells

Taylor Hanford, Thomas Wilkinson, Lisa Williams, Thomas Humphrey

Swansea University, Swansea, United Kingdom

#### Abstract

*Campylobacter jejuni* is the world's most common food-borne pathogen. *Campylobacter* pathogenesis involves translocation across the intestinal epithelial cell barrier in both humans and chickens and previous work has suggested that strains of *E. coli* (ExPEC / APEC) may facilitate this process. This study aims to determine the effect that this relationship may have upon the invasive and adhesive potential of the two microbes using our recently published human and avian *in vitro* model.

Invasiveness of *C. jejuni* and *E. coli* strains were measured using human (Caco-2) and avian (8E-11) epithelial cell lines derived from the gastrointestinal tract and were characterised by epifluorescent and confocal microscopy. Adhesion and invasion assays were carried out to determine the pathogenicity of the different bacteria. Metabolic activity of Caco-2 and 8E-11 together with bacterial strains using alamar blue assay.

Confocal and epifluorescence microscopy determined the strong presence of cytokeratin in Caco-2 cells whilst weak to medium signals were detected in 8E-11 cells. Optimal doses and times for of gentamicin across all strains was 0.02mg/ml for 90 minutes which did not affect metabolic activity of epithelial cells. Significant diversity was found in the adhesive/invasive potential of bacteria when exposed to human and avian cell types. The metabolic rate of *C. jejuni* (11168) and *E. coli* (K12) was investigated with the presence of K12 having negative impacts upon the activity of 11168.

The model described here will provide opportunity to improve our understanding of *Campylobacter* invasion mechanisms in human and chickens so that improved strategies to negate these consequences may be designed.

# Presenting Wednesday Evening

Poster No 178

## Identification of *Staphylococcus aureus* genetic factors associated with the subversion of macrophage phagosomal acidification

Paul Morris<sup>1,2</sup>, David Dockrell<sup>3</sup>, Stephen Renshaw<sup>1</sup>, Simon Foster<sup>1</sup>, Andrew Peden<sup>1</sup>

<sup>1</sup>The University of Sheffield, Sheffield, United Kingdom. <sup>2</sup>Sheffield Teaching Hospitals NHS Trust, Sheffield, United Kingdom. <sup>3</sup>The University of Edinburgh, Edinburgh, United Kingdom

**Abstract**

**ABSTRACT WITHDRAWN**

# Presenting Tuesday Evening

Poster No 179

## Analysis of human corneal cell response to *Acanthamoeba castellanii*-conditioned medium

Abdullah Alhazmi, Andy Hopkinson, Laura Sidney, Hany Elsheikha

University of Nottingham, Nottingham, United Kingdom

### Abstract

*Acanthamoeba keratitis* (AK) is a corneal infection caused by species of the genus *Acanthamoeba* and can lead to severe sight-threatening problems. The frequency of reported cases worldwide is increasing. Despite the awareness of this growing threat, and despite advances in antimicrobial chemotherapy and supportive care, the pathogenesis of this infection remains unclear. In this study, we evaluated the temporal changes in the viability of human corneal cells in response to serial dilutions of *Acanthamoeba castellanii*-conditioned medium (ACM), and examined the mechanisms that might underpin the ACM-caused cytotoxicity. We characterized the cytotoxic effects of the total secretome, represented by the culture supernatant of *A. castellanii*, on human corneal epithelial and stromal cells. The response of these cells to various concentrations and different exposure times of supernatant were analysed using Sulforhodamine B assay. Fluorescent staining of actin was also used to assess the effect of *A. castellanii* secretome on the structural integrity of the host cells. Cell toxicity was also assessed using lactate dehydrogenase assay and caspase 3 assay. The results showed that ACM causes a significant decrease in cell viability, increased apoptosis and caused derangement of actin cytoskeleton of corneal cells at high concentration and longer exposure time. By inhibiting proteases, key virulence determinants of *A. castellanii*, we showed that the cytopathic effects caused by ACM are mediated by proteases. These findings provide more insight into *A. castellanii* secretome and reinforce the importance of further characterization of the role of *A. castellanii* proteases as key effectors in the pathogenesis of AK.

# Presenting Wednesday Evening

## Final category: Public Health: surveillance and epidemiology

Poster No 180

### Role of Climatic factors influencing Dengue incidence in central India: A model for Dengue prediction

Rishi Kumar Nigam

Rajeev Gandhi College, Barkatullah University, Bhopal, India

#### **Abstract**

##### **Introduction:**

Dengue is caused an arbovirus and transmitted by Aedes mosquito. The mosquito lifecycle is influenced by various climatic factors This study was carried out to examine whether the climatic factors data can be used to predict yearly dengue cases .

##### **Methods:**

Monthly reported dengue cases and climate data for the years 2012–2016 were obtained from the Chief Medical and Health officer, Bhopal and Meteorological Department , respectively. One-way analysis of variance was used to analyse whether the climatic parameters differed significantly among seasons. Four models were developed using negative binomial generalized linear model analysis. Monthly rainfall, temperature, were used as independent variables, and the number of dengue cases reported monthly was used as the dependent variable. The first model consider data from the same month, while the other three models involved incorporating data with a lag phase of 1, 2, and 3 months, respectively.

##### **Results:**

Climatic factors, rainfall and maximum temperature were significantly correlated with monthly dengue cases. The greatest number of cases was reported during the post-monsoon period. Temperature, rainfall, and humidity varied significantly across the pre-monsoon, monsoon, and post-monsoon periods. The best correlation between these climatic factors and dengue occurrence was at a time lag of 2 months.

##### **Conclusions:**

The climate had a major effect on the occurrence of dengue infection in Bhopal city of central India. Though the prediction model had some limitations in predicting dengue cases, it could forecast possible outbreak two months in advance with considerable accuracy and can act as early warning system.

# Presenting Tuesday Evening

## Poster No 181

### **A review of the utility of PET imaging in *Staphylococcus aureus* bacteraemia (SAB) using electronic data.**

Chiara Cavaliere<sup>1</sup>, John Klein<sup>1</sup>, Anna Goodman<sup>1,2</sup>

<sup>1</sup>Department of Infection, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. <sup>2</sup>MRC Clinical Trials Unit at University College London, London, United Kingdom

#### **Abstract**

##### **Introduction:**

If the infectious focus is not identified, there is an associated higher mortality in *Staphylococcus aureus* bacteraemia (SAB) [1]. A retrospective observational study found patients with high-risk SAB who had a PET scan had a 67% reduction in mortality compared to those who did not [2]. We used electronic data to determine the range of infectious foci in SAB and the use of PET in our trust.

##### **Methods:**

From 1/1/13 to 31/12/18 all patients with SAB at St Thomas' Hospital, London, were reviewed by the infectious diseases team and data collected prospectively using an Access database. A retrospective analysis of this database, electronic records, radiology and nuclear imaging was conducted.

##### **Results:**

355 episodes of SAB affected 296 patients. 28 (8%) episodes were MRSA in 24 (8%) of patients. Infectious sources found included bone and joint (23%), IV access (15%), vascular infection (15%), no infective focus (13%), SSTI (12%) and endocarditis (9%). Imaging used to determine the focus of infection included MRI (18%), CT (26%) and PET scan (10%). In-hospital mortality was significantly lower in those who had a PET scan than in those who did not (1/31, 3% v. 50/265 patients (last episode), 19%,  $P=0.03$ ).

##### **Conclusions:**

Mortality was lower in those who had PET at our trust. This is consistent with data published from other centres and requires further investigation. A prospective trial of PET in SAB is urgently needed.

##### **References:**

[1] PMID: 30179645

[2] PMID: 28336786

# Presenting Wednesday Evening

## Poster No 182

### **Epidemiology of paediatric infection a 10-year experience on the Gold Coast, Queensland, Australia**

William Fairbairn

Gold Coast health, Gold Coast, Australia

#### **Abstract**

##### Introduction

The pathological invasion of a joint and subsequent inflammation is known as septic arthritis. The hip and knee are the most frequently involved joints. Staphylococcus aureus is the most common cause of septic arthritis in children. In clinical practice, the diagnosis of septic arthritis is based on isolation of causative organism from the joint fluid or positive blood cultures plus clinical and/or radiological signs and symptoms consistent with septic arthritis.

##### Methods

A retrospective analysis was undertaken of paediatric joint infections presenting to the Gold Coast Orthopaedic Department between January 2008 and December 2017.

##### Results

A total of 155 children < 17 years old fulfilled the recruitment criteria for inclusion. 93 patients were excluded for coding issues, incorrect diagnosis and multiple encounters of the same patient with different medical teams.

2 patients in the cohort the hip was the most common joint involved (23) following by knee (16), elbow (8), ankle (6), foot (5), shoulder (2) and wrist (2). Two of the organisms were confirmed from ward aspirates and 59 from intraoperative samples. Of the microbes identified aseptic was the most common (48%) followed by MSSA (29%), strep pyogenes (5%), MRSA (3%), strep pneumonia (3%), pseudomonas (3%), kingella kingae (3%), serratia marcescens (3%), haemophilus parainfluenzae (2%).

##### Conclusion

This study is the first to publish the epidemiological profile of paediatric joint infections on the Gold Coast Australia and highlights the most common identified pathogens but also highlights the variety of organisms implicated in the condition.

# Presenting Tuesday Evening

## Poster No 183

### **A retrospective study to evaluate the epidemiology, standard of care, outcomes and resource utilization in patients with confirmed or suspected infection by a carbapenem resistant Gram-negative organism in the UK – the CARBAR study - Epidemiology of Gram-negative organisms**

Simon Goldenberg<sup>1</sup>, Andrew Dodgson<sup>2</sup>, Gavin Barlow<sup>3</sup>, Benjamin Parcell<sup>4</sup>, Lim Jones<sup>5</sup>, Mahableshwar Albur<sup>6</sup>, Peter Wilson<sup>7</sup>, Abid Hussain<sup>8</sup>, David A Enoch<sup>9</sup>, Aleksandra Marek<sup>10</sup>, Luke Saunders<sup>11</sup>, Sara Lopes<sup>12</sup>, Davide Manisero<sup>12</sup>, Christopher Longshaw<sup>12</sup>, Keiko Tone<sup>12</sup>

<sup>1</sup>Guys and St Thomas' NHS Foundation Trust and King's College, London, United Kingdom. <sup>2</sup>Manchester Royal Infirmary, Manchester, United Kingdom. <sup>3</sup>Hull University Teaching Hospitals, Hull, United Kingdom. <sup>4</sup>Ninewells Hospital, Dundee, United Kingdom. <sup>5</sup>University Hospital of Wales, Cardiff & Vale, Cardiff, United Kingdom. <sup>6</sup>Southmead Hospital, Bristol, United Kingdom. <sup>7</sup>University College Hospital, UCLH, London, United Kingdom. <sup>8</sup>Heartlands Hospital, Birmingham, United Kingdom. <sup>9</sup>Addenbrooke's Hospital, Cambridge, United Kingdom. <sup>10</sup>Glasgow Royal Infirmary, Glasgow, United Kingdom. <sup>11</sup>OpenVie, London, United Kingdom. <sup>12</sup>Shionogi, London, United Kingdom

#### **Abstract**

**Background:** Antimicrobial resistance is a global threat with potentially devastating consequences and significant costs to society. Carbapenems are customarily reserved for difficult-to-treat Gram-negative (GN) infections, but resistance is increasing; hence WHO classified carbapenem-resistant (CR) strains of *Acinetobacter baumannii* (CRAB), *Pseudomonas aeruginosa* (CRPA), and *Enterobacteriaceae* as critical priority.

CR-GN infections have few effective treatment options, with variable outcomes and scarce clinical trial evidence. In this analysis, we describe the epidemiology of patients infected with CR-GN organisms.

**Methods:** Retrospective chart review from 10 sites in UK. Adult patients admitted to hospital between April 2017-March 2018 were included if they had a confirmed GN bacterial infection and/or positive screening isolate for CR-GN bacteria colonisation. Data collection included microbiological results and patient demographics.

**Results:** 36,078 patients were included, representing 42,310 GN isolates, of which 3,063 (7%) were CR-GN. Mean age was 59.9 years; 60.2% were female.

The most prevalent GN species were *E. coli* representing 51.8% of all isolates, followed by *P. aeruginosa* (12.0%), and *K. pneumoniae* (8.7%).

Within CR-GN isolates CRPA represented 26.6%, *E. coli* 21.5%, and other bacteria 51.9% (including CRAB and *Stenotrophomonas maltophilia*).

**Conclusion:** GN isolates are frequent across the UK, and 7% are CR-GN, representing a small important segment of this population. Understanding the real-world prevalence of GN and particularly CR-GN infections, where there is the highest unmet need, can help optimise antimicrobial stewardship and infection control programmes and ultimately improve overall patient's and healthcare system's outcomes, which is the focus of this study's next phase.



# Presenting Wednesday Evening

## Poster No 184

### **Escherichia coli blood stream infection in cancer patients: a multicentre, multidisciplinary collaborative audit to identify risk factors in order to target preventative strategies for improvement of patient care and outcomes**

Pat Cattini<sup>1</sup>, Paul Chadwick<sup>2</sup>, Gary Thirkell<sup>2</sup>, Catriona McManamon<sup>2</sup>, Deborah Kretzer<sup>3</sup>, Frances Davies<sup>4</sup>, Eilidh Stewart<sup>5</sup>

<sup>1</sup>Royal Marsden, London, United Kingdom. <sup>2</sup>Christie Hospital NHS Foundation Trust, Manchester, United Kingdom. <sup>3</sup>Clatterbridge Cancer Centre, Liverpool, United Kingdom. <sup>4</sup>Imperial College Healthcare Trust, London, United Kingdom. <sup>5</sup>Barts Health NHS Trust, London, United Kingdom

#### **Abstract**

##### *Background*

*Escherichia coli* is a common cause of blood stream infections (BSI) in the UK. Published figures for *E. coli* BSI show higher rates in specialist cancer centres than in other hospitals, but the aetiology in oncology patients is not fully understood.

##### Methods

Five UK cancer centres collaborated to review how *E. coli* affects oncology patients. A key part of this work has been an audit of all cases of *E.coli* BSI in patients in 2019 that met UK HCAI surveillance definitions. A multidisciplinary team of clinicians, nurses and pharmacists designed the audit to include >60 variables which may affect cancer patients.

##### Results

The risk factors for *E.coli* BSI among these cancer patients showed marked differences from those seen in the general UK population. The affected population was younger; there was higher rate of hospital-onset infections ; and, taking into account a number of healthcare interactions, the potential for healthcare associated infections was much higher. There was also a higher associated 30-day mortality and high rates of antimicrobial resistance in BSI isolates. Common univariate risk factors associated with BSI included use of SACT, neutropaenia, presence of acute kidney injury, presence of an invasive device, antimicrobial therapy, use of PPIs and a lack of independent hydration. By contrast, haematopoietic stem cell transplantation, mucositis and recent surgery were less common associations.

##### Conclusion

This audit demonstrates differences between risk factors seen in cancer patients with *E.coli* BSI and may explain why rates are higher in cancer centres.

# Presenting Tuesday Evening

## Poster No 185

### Awareness of Primary Health Care Providers about Vaccination in Eastern regions of Ukraine.

Iryna Voloshyna<sup>1,2</sup>, Fedir Lapii<sup>3shin</sup>

<sup>1</sup>Zaporizhzhia State Medical University, Zaporizhzhia, Ukraine. <sup>2</sup>Academy of Family Medicine of Ukraine, Kyiv, Ukraine. <sup>3</sup>National Academy of Postgraduate Education named by Shupik, Kyiv, Ukraine

#### Abstract

Background.

A dramatic drop in routine immunization coverage is observed in Ukraine during recent years. Ukraine has the lowest rate of vaccination in Europe that imposes a high risk of communicable diseases on a population. More than 56.000 people sickened with measles from 2018-2019 yrs. Although Primary Health Care providers (PHCPs) in Ukraine play an important role in administering vaccines to their patients the data about PHCP's awareness regarding immunization are lacking.

Methods.

A self-administered survey among 265 PHCPs (44 doctors, 221 nurses) was conducted during Public Health Trainings from 01 March to 31 April 2019 in three Eastern Ukrainian regions (Zaporizhia, Dnipro, Kharkiv). The level of basic knowledge on vaccines schedule, safety and efficacy of vaccination, communication skills ect (totally ten statements and ten questions) were evaluated.

Results.

Overall 264 (99.6%) PHCPs highlighted the obvious need in strengthening evidence-based knowledge related to immunization topics and communication skills. Right answers regarding safety and efficacy of vaccines were obtained in 21% participants, 47% PHCPs had doubts for vaccine's safety and contradictions. Only 8% of participants were convinced in aspects of effective communication. Physicians had higher knowledge scores in routine vaccines schedule (32; 73%), compared to nurses (105; 47.5%),  $p=0.0016$ ; but did not differ in aspects of vaccine's safety: 16% among physicians' vs 17% among nurses ( $p>0,05$ ).

Conclusion.

The majority of PHCPs in Eastern regions of Ukraine have concerns about vaccines safety and efficacy, as well as lack of communication knowledge. Effective continuing evidence-based education of providers may help address these concerns.

# Presenting Wednesday Evening

Poster No 186

## **Culture-independent Multilocus Sequence Typing (MLST) screening for *Haemophilus influenzae* cross-infection in non-cystic fibrosis bronchiectasis (NCFB)**

Catherine Wilson<sup>1</sup>, Philip Mitchelmore<sup>1,2</sup>, Alan Brown<sup>1</sup>

<sup>1</sup>University of Exeter, Exeter, United Kingdom. <sup>2</sup>Royal Devon and Exeter NHS Foundation Trust, Exeter, United Kingdom

### **Abstract**

**Background** - There is some evidence of *Pseudomonas aeruginosa* cross-infection between patients with non-cystic fibrosis bronchiectasis (NCFB), and clear evidence in Cystic Fibrosis. *Haemophilus influenzae* (*H.influenzae*) is the more common pathogen in NCFB patients, yet cross-infection remains unexplored. We present the novel application of culture-independent Multilocus Sequence Typing (MLST) to screen for cross-infection of *H.influenzae* in NCFB in both culture-positive and -negative samples.

**Methods** - We interrogated DNA from 32 sputum samples (26 patients) in our NCFB biorepository, who were known to have *H.influenzae* in their sputum by preceding 16S rRNA sequencing. Fragments of 7 *H.influenzae* housekeeping genes were amplified and sequenced. Sequence types were allocated via the MLST scheme. For 5 patients, multiple sputum samples taken at least 4 months apart were assessed longitudinally.

**Results** - Culture-independent MLST identified 31 of 32 sputum samples as harboring *H.influenzae*. Of these, 26 were positive for *H.influenzae* using culture methods. 25 of the 26 culture-positive samples were MLST positive. All 6 culture-negative samples were MLST positive. A MLST sequence type (ST) was allocated to 27 of 32 sputum samples. Five patients had multiple sputum samples with matching STs, indicating strain stability and the consistency of MLST. Two patients who were known household contacts had matching STs and possibly transmitted *H.influenzae* in their household. The remaining 15 STs were unique, suggesting no evidence of cross-infection.

**Conclusion** - Culture-independent MLST identifies *H.influenzae* in culture-negative patients with NCFB and is a potential screening tool for cross-infection. This study did not reveal potential cross-infection events in this cohort.

# Presenting Tuesday Evening

Poster No 187

## Pneumococcal 13-valent polysaccharide vaccination (PCV13) response in patients with pulmonary aspergillosis

Sunil Aggarwal, Chris Kosmidis, David Denning

Manchester University NHS Foundation Trust, Manchester, United Kingdom

### Abstract

#### Background

Response to pneumococcal 23-valent polysaccharide vaccine (PPV23) is poor in patients with pulmonary aspergillosis, pneumococcal 13-valent polysaccharide vaccine (PCV13) is believed to be more antigenic. Thus, practice at the national aspergillosis centre (NAC), Manchester University NHS foundation trust (MFT) is to give PCV13. However, response to PCV13 has not been studied.

#### Methods

We conducted a retrospective, observational study of patients with pulmonary aspergillosis at the NAC, MFT. Patients who had non-protective pre-vaccine levels and received PCV13 between January-2015 and July-2019 with serology available within 3 months after vaccination were included.

Serotype-specific pneumococcal IgG antibodies were quantified for 12 pneumococcal serotypes. Non-protective immunity was defined as pre-vaccine level  $<0.35\mu\text{g/mL}$  to  $>6$  out of 12 serotypes. Protective response was defined as level  $>1.3\mu\text{g/mL}$ , or an increase in concentration  $\geq 4$ -fold for at least 9 of 12 serotypes within 3 months.

#### Results

47 of 144 patients receiving PCV13 had non-protective pre-vaccination levels and repeat serology within 3 months post-vaccination. 52% and 20%, of patients who received 2 and 1 doses (respectively) developed protective immunity;  $\chi^2(1)=2.987, p=0.084$ . 42.86%, 69.23%, 42.86%, 50%, and 0% of patients with chronic pulmonary aspergillosis (CPA), allergic bronchopulmonary aspergillosis (ABPA), severe asthma with fungal sensitisation, aspergillus bronchitis, and mixed ABPA and CPA developed protective immunity;  $\chi^2(4)=6.329, p=0.176$ .

#### Conclusion

Patients with CPA respond poorly to PCV13 compared to ABPA. Response to two doses of PCV13 is comparable to one dose of PPV-23<sup>1</sup>. Patients with pulmonary aspergillosis should receive two doses of PCV13 rather than one dose.

# Presenting Wednesday Evening

## Poster No 188

### **Necrotizing Otitis Externa: Four theories behind the 15-year astronomic rise of this uncommon infection**

Stefan Linton, Emma Stapleton

Manchester Royal Infirmary, Manchester, United Kingdom

#### **Abstract**

##### **Introduction:**

Necrotizing otitis externa (NOE) is a severe, life threatening propagating osteomyelitis of the skull base that originates from a severe otitis externa. This rare condition may not be as uncommon as once understood. Epidemiologic data reveals an unexpected and drastic rise in the number of reported cases over the last 15 years. Using national data and published literature, we explore four theories behind the rise in incidence of this condition.

##### **Methods:**

A quantitative descriptive study was undertaken using epidemiological data obtained from the Hospital Episode Statistics (HES) database. NOE cases reported between 2002 – 2017 were compiled and analyzed. Using these results and current evidence within the published literature, four theories were formulated and explored to explain the upward trend in incidence.

##### **Results:**

There were a total of 7,327 NOE cases reported within the 15-year time period. The majority of cases (60%) occurred in the elderly (Age 75+) with a 5:2 male predominance. Mean length of stay and mean total bed days were 16.3 and 5,019 days, respectively.

##### **Discussion:**

The number of NOE cases has increased by more than 1000% within the 15-year time period, from 123 cases in 2002 to 1,405 in 2017. We theorize that this increase maybe due to:

- (1) the rising prevalence of diabetes
- (2) the increase in antibiotic resistance
- (3) the rising ageing population
- (4) improved physician awareness of NOE

**Presenting Tuesday Evening**

## **Final category: Tropical diseases and Travel Medicine**

**Poster No 189**

**Review of enquiries to the UK national travel advice line by healthcare professionals regarding immunocompromised travellers**

Blair Merrick<sup>1</sup>, Sanch Kanagarajah<sup>2</sup>, Dipti Patel<sup>2</sup>

<sup>1</sup>Hospital for Tropical Diseases, London, United Kingdom. <sup>2</sup>National Travel Health Network and Centre, London, United Kingdom

**Abstract**

**ABSTRACT WITHDRAWN**

# Presenting Wednesday Evening

Poster No 190

## A lateral flow strip in combination with microfluidic device and polymerase chain amplification for rapid and visual detection of lymphatic filarial infection

Achinya Phuakrod<sup>1</sup>, Witsaroot Sripumkhai<sup>2</sup>, Wutthinan Jeamsaksiri<sup>2</sup>, Pattaraluck Pattamang<sup>2</sup>, Suporn Foongladda<sup>1</sup>, Patsharaporn Sarasombath<sup>3</sup>, Sirichit Wongkamchai (corresponding author)<sup>3</sup>

<sup>1</sup>Department of Microbiology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand. <sup>2</sup>Thai Microelectronic Center, National Electronics and Computer Technology Center, Thailand Science Park, Pathumthani, Thailand. <sup>3</sup>Department of Parasitology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

### Abstract

#### Background:

Lymphatic filariasis (LF) is a neglected tropical disease caused by the filarial nematode parasites which is transmitted by the bites of infective mosquitoes. The diagnosis of LF traditionally relies on the detection of circulating microfilariae (mf) using Giemsa-stained thick blood smears which has several limitations.

#### Materials and methods:

In the present study, we developed a lateral flow (LF) strip to be used in combination with a novel microfluidic device and polymerase chain reaction (PCR) for a rapid and visual detection of lymphatic filariae, *Brugia malayi*/ *Wuchereria bancrofti* infection in human blood samples.

#### Results:

The assay targets *B. malayi* *Hha I* gene and *W. bancrofti* *Ssp* gene. Prior to perform the assay, no DNA product clean up step required, thus, it can shorten time and reduce cost. The LF strip can detect as low as 10 pg of DNA product and no cross-reactivity with DNA of other parasites such as *Gnathostoma spinigerum*, *cysticercis solium* nor with DNA of other filariae i.e. *Brugia pahangi*, *Dirofilaria immitis* and *D. repens*.

#### Conclusions:

The developed LF strip shows high sensitivity and specificity, in combination with a novel microfluidic device and PCR, can be used as an alternative tool for the diagnosis of lymphatic filariasis.

# Presenting Tuesday Evening

## Poster No 191

### **Cast the net wide: Assessing the root causes of malaria transmission through the knowledge, attitude and practice of treated inpatients in rural western Uganda**

Peter Davies<sup>1</sup>, Maia Tanner<sup>2</sup>, Bwambale Jemari<sup>3</sup>, Susanna Henderson-Howat<sup>4</sup>

<sup>1</sup>Monklands University Hospital, Glasgow, United Kingdom. <sup>2</sup>Nelson Hospital, Nelson, New Zealand.

<sup>3</sup>Kagando Mission Hospital, Kagando, Uganda. <sup>4</sup>Queen Elizabeth University Hospital, Glasgow, United Kingdom

#### **Abstract**

##### Introduction

Despite significant progress malaria entails a significant public health concern in western Uganda. This qualitative cross-sectional study explores the knowledge, attitude and practice pertaining to malaria in rural Uganda.

##### Methods

With ethical approval from the management committee fifty patients were recruited between March-May 2018 at Kagando Hospital, western Uganda. Those with evidence of malaria transmission were recruited, at random prior to discharge, from the medical, paediatric (parents) and maternity wards. Participants were consented and briefed by a translator prior to answering a standardised semi-structured questionnaire. Answers were anonymised before being tabulated and analysed electronically.

##### Results

Participants were commonly, primary-school educated, subsistence farmers (56%). Knowledge of symptoms, mosquito breeding sites and feeding habits was generally good, yet dichotomous *causes* of malaria were common (mosquito n=43 and “unsafe drinking water” n=25). Malaria was “normal” to 40% of respondents and 92% acknowledge that it “kills”. Ten-percent accessed herbalists and 74% self-medicated with 30% admitting to not completing the treatment. Eighty-two percent of patients received governmental net donation, but household use was variable and often infrequent. Indoor residual spraying (IRS) was practiced by two participants with just 30% aware of it. Stagnant water was present in 46% of communities without any knowledge of community spraying.

##### Conclusions

Participants demonstrated reasonable knowledge on vector/disease characteristics and treatment. Net access was within governmental target level, but household practice was highly variable. Notably there was almost no IRS and no targeted spraying. A more integrated approach to vector control could represent an appealing strategy.



# Presenting Wednesday Evening

## Poster No 192

### A case of the 'unusual' in the 'usual'.

Caroline Williams, Amandip Sahota, Manish Pareek

University Hospitals of Leicester NHS Trust, Leicester, United Kingdom

#### Abstract

##### Background

Only five cases of *Salmonella paratyphi* infective endocarditis (IE) have been previously reported. Two were paediatric patients, one other had an underlying cardiac lesion, and all were living in endemic areas. Here we present the first case of *salmonella paratyphi* IE in a returning traveller.

##### Case

A 61-year-old Indian born British national with no significant past medical history or recent dental procedures presented with a 4 week history of fever and weight loss following travel to India. Whilst abroad she had a self-limiting episode of diarrhoea with fever for 1 week with no antimicrobials. Three weeks after her return the fever returned (without diarrhoea) and she presented to hospital 4 weeks later.

Examinations findings were; haemodynamically stable, temperature 39.5°C, no splinter haemorrhages, no lymphadenopathy, soft systolic murmur best heard at parasternal edge.

Investigations revealed raised inflammatory markers (CRP 80) and blood cultures grew gram negative bacilli within 24 hours which cultured as *Salmonella paratyphi* A.

Trans-thoracic Echocardiogram showed echo-bright thickening of the non-coronary cusp of the aortic valve, which was confirmed as a small vegetation (0.5cm x0.2cm) on trans-oesophageal echocardiogram.

IV antibiotics were given for a total of 6 weeks and repeated TOE at 1 month showed a healing vegetation. Repeated imaging is awaited.

##### Conclusions

This interesting case in an otherwise healthy patient highlights the need to be vigilant for unusual organisms causing infective endocarditis – a relatively common condition - in returning travellers.

# Presenting Tuesday Evening

## Poster No 193

### Demographics of new diagnoses of leprosy in the UK over 23 years: a retrospective study of cases at the Hospital for Tropical Diseases, London

Amy McIntosh<sup>1,2</sup>, Anna Checkley<sup>1</sup>, Angela McBride<sup>3</sup>, Steve Walker<sup>1,4</sup>, Diana Lockwood<sup>4</sup>

<sup>1</sup>Hospital for Tropical Diseases, London, United Kingdom. <sup>2</sup>University of East Anglia, Norwich, United Kingdom. <sup>3</sup>Oxford University, Oxford, United Kingdom. <sup>4</sup>London School of Hygiene and Tropical Medicine, London, United Kingdom

#### Abstract

##### BACKGROUND:

Leprosy is rare in the UK, but migration from endemic countries results in new diagnoses annually. Early recognition, diagnosis and treatment can prevent harmful stigma and disability.

##### METHODS:

We conducted retrospective analysis from a database of new cases of leprosy seen at the Hospital for Tropical Diseases, London from 1995 to 2018. We aimed to identify typical demographics of patients presenting with leprosy and identify causes and consequences of delayed diagnosis.

##### RESULTS:

157 cases were included. A large proportion were male (67.5%) with a median age of 34 years. Most were non-UK born and migrated in adulthood. 41.3% of cases were acquired in India, Sri Lanka or Bangladesh. Borderline tuberculoid (43.9%) was the most common type, followed by lepromatous leprosy (33.8%). The mean time between arrival in the UK and symptom onset was 5.87 years (SD 10.33). It took over 5 years for 12.8% of patients to be diagnosed. 93.6% of patients completed multidrug treatment following diagnosis.

##### CONCLUSION:

Male predominance and age at diagnosis reflects global epidemiology of leprosy. Patterns of acquisition reflect trends in UK migration from endemic countries. The typical patient presenting to the clinician is a young male who has migrated as an adult and developed symptoms in the years surrounding migration. Many patients may have developed disability before treatment commences as the time to diagnosis can be prolonged. Once diagnosed in the UK, treatment is of high quality, readily available, and effective: earlier recognition by clinicians can prevent disability and reduce the risk of transmission.

# Presenting Wednesday Evening

Poster No 194

## Developing a PCR-Based Diagnostic Method of Detecting the Prevalence of Emerging Tick-Borne Diseases in Scotland

Lauren Orr

Glasgow Caledonian University, Glasgow, United Kingdom

### Abstract

Ticks are able to transmit zoonotic pathogens to humans including the most frequently reported *Borrelia burgdorferi*, and the lesser known *Anaplasma phagocytophilum*, *Borrelia miyamotoi*, *Babesia spp.*, and *Rickettsia spp.* Ticks also play an important role in the spread and maintenance of disease lifecycles. Lyme disease is currently the only tick-borne disease monitored by health professionals in Scotland, however, it is still underreported and misdiagnosed. In this study adult female ticks from 32 hedgehogs from various locations in Scotland were tested for the presence of tick-borne infections using PCR and confirmed by sequencing. PCR results showed there was an 18.75% incidence of *B. burgdorferi*, 34.38% of *B. miyamotoi*, 12.5% of *Rickettsia spp.*, 3.13% of *A. phagocytophilum*, and 3.13% of *Babesia spp.* 100% of the ticks were confirmed as *Ixodes ricinus* and from hedgehog hosts. A co-infection of *B. burgdorferi* and *B. miyamotoi* was found by PCR and has not been previously reported in the UK. *B. burgdorferi* was confirmed by sequencing as *B. afzelii*, however, *B. miyamotoi* has not been confirmed by sequencing. Another co-infection of *B. miyamotoi*, *Babesia spp.*, and *Rickettsia spp.* was found by PCR, however, not confirmed by sequencing. Detection of co-infections in human cases is difficult due to the similar nature of the infections, making it difficult to differentiate between pathogens. This study aims to develop a methodology capable of distinguishing between pathogens, identify the tick and host species, and determine the prevalence of tick-borne disease in Scotland by PCR.

# Presenting Tuesday Evening

Poster No 195

## Brewer's Yeast as a cause of infective endocarditis

Robert Hammond; Dinesh Aggarwal; Will Hurt; Elena Ferran; Giovanni Satta; Aula Abbara  
Imperial College Healthcare NHS Trust, London, United Kingdom

### Abstract

#### Background:

Molecular tests are increasingly used in culture negative endocarditis and may be helpful adjuncts to diagnosis; here we report the case of *Saccharomyces cerevisiae* mitral valve endocarditis in an immunocompetent patient.

#### Case History:

A previously well 63-year-old man presented with a ten-day history of fever, nights sweats and progressive shortness of breath. On arrival, he was in acute respiratory distress, in pulmonary oedema and had a pansystolic murmur. A transoesophageal echocardiogram showed severe mitral regurgitation and a mass on the posterior leaflet of the mitral valve. He was treated for a presumed native valve endocarditis with Amoxicillin, Flucloxacillin and Gentamicin. He had a minimally invasive mitral valve repair; a vegetation was noted. All initial cultures and serologies were negative. He improved and was discharged on ceftriaxone and doxycycline on OPAT. Results three weeks post-surgery showed a Beta D Glucan of >500pg/mL (cut off 80) and an 18S PCR on the valve positive for *Saccharomyces cerevisiae*. No histology was available from the vegetation and fungal cultures were negative. He was much improved at that point and received 6 weeks of voriconazole to treat invasive infection; his Beta D Glucan fell to less than 30 and he was well on follow-up.

#### Conclusion:

*Saccharomyces cerevisiae* is an unusual cause of an endocarditis in an immunocompetent patient. This case illustrates the importance of considering non-bacterial causes of endocarditis in such cases and the utility of molecular diagnostics as adjuncts to traditional culture techniques.



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