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6: Diverse PfEMP1 types medicate a key Plasmodium falciparum virulence phenotype- implications for vaccine design

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Friday 22 November, 08:45, Main Auditorium

Objectives:
The Plasmodium falciparum blood-stage antigen family PfEMP1 is a candidate for vaccines designed to protect against severe malaria. Rosetting is a PfEMP1-mediated virulence phenotype where uninfected red blood cells adhere to infected red blood cells, and rosetting could be targeted in such a vaccine. Only eight PfEMP1 variants which cause rosetting have been well described to date, and the characterisation of further rosetting PfEMP1 variants is needed to determine which, and how many, variants would be required for inclusion in an anti-severe malaria vaccine cocktail.

Methods:
Here we used var gene expression profiling in Kenyan P. falciparum laboratory lines to identify rosetting-associated var gene transcripts. We then raised specific IgG against the PfEMP1 variants encoded by these transcripts to detect the variants on the surface of parasitised erythrocytes. We used rosette-disruption and recombinant PfEMP1 domain binding assays to demonstrate the role of these variants in rosetting.

Results:
Of the four novel rosette-mediating PfEMP1 variants which we identified, two displayed conservation compared to rosetting variants identified previously. The remaining two had a sequence type not previously known to mediate rosetting.

Conclusions:
Overall, our findings demonstrate that diverse PfEMP1 types can mediate rosetting, and variants which are antigenically representative of these diverse types would need to be included in a vaccine designed to induce anti-rosetting immunity.

166: A rash diagnosis – viral it ain't! (A case of chronic meningococcaemia in a student with a C3 deficiency)

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Friday 22 November, 08:45, Main Auditorium

We present a 19-year-old student who after multiple visits to primary care with malaise, myalgia, night sweats and "rash" was each time discharged with a diagnosis of "probable viral infection." Despite repeated documentation of a 'rash' photography and blood investigations were not performed. Two weeks after initial presentation, feeling very unwell, he was finally referred to the same day emergency care (SDEC) unit at our hospital. A non-itchy papular blanching rash was noted, but with nil else of note and despite a raised CRP he was discharged, again with "presumed viral infection".

The following day, blood cultures yielded Gram negative diplococci. With a presumptive diagnosis of chronic meningococcaemia, he was recalled for empirical intravenous ceftriaxone. On examination, a small area of classical purpuric rash was noted on the foot and further detailed history obtained. The isolate was identified subsequently as Neisseria menigitidis, serogroup B non-typeable, and further investigation revealed a deficiency in complement component 3 (C3).

The immunological and public health implications of chronic meningococcaemia and difficulties of diagnosis will be discussed. We will present a "diagnostic approach for' likely infective rashes of unknown origin" we have developed, with photographs a schema of' rash investigations' that would have led to the diagnosis sooner and might be useful in future cases.

244: Evaluating High-Risk Fluoroquinolone Prescribing Practices in an NHS Teaching Hospital: A Three-Year Retrospective Review

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Friday 22 November, 08:45, Hall 1C

Background: Fluoroquinolone prescribing is associated with risk of toxicity (tendinopathy) in patients aged >60years old, with renal dysfunction or on concurrent corticosteroids. This risk can be mitigated by minimising unnecessary fluoroquinolone use in these groups. Here, we present the prevalence of fluoroquinolone prescribing in each risk group across multiple NHS hospitals

Methods: Electronic health records were interrogated to identify all inpatients prescribed systemic fluoroquinolones, any concurrent corticosteroids, known CKD 4/5 and age across two hospitals (London, UK); April 2021 – March 2024.

Results: 10,177 prescriptions for fluoroquinolones over a 3-year period were analysed; 65% of prescriptions were for patients ≥60years old. Additional risk factors including concurrent corticosteroid use (1,231/6,601;18.6%) and CKD4/5 (897/6,601;13.6%) were present in this older age group; 162(2.5%) of patients ≥60years old received fluoroquinolone therapy despite both corticosteroids use and known CKD4/5. Rates of CKD and corticosteroid co-administration was lower for younger adults (18-60years) and paediatrics.

Discussion: Despite multiple MHRA alerts highlighting fluoroquinolones toxicities, usage of systemic fluoroquinolones in patients with one or more risk factors for toxicity remain high in our local practice. Approximately 1 in 5 patients ≥60years receive concurrent corticosteroids in our practice despite the know risks. Further work is required to prioritise non-fluoroquinolone antimicrobials in patients on steroids or for indications where steroid use common (e.g. ieCOPD). Antimicrobial guidelines have been updated, local training for elderly care specialities and a new electronic prescribing alert have been introduced to increase awareness of this risk factor in clinical practice with aim to reduce high-risk prescribing.

127: Quantifying the effect of masking and other non-pharmaceutical interventions on SARS-CoV-2 infection and vaccine hesitancy in UK healthcare workers during the COVID-19 pandemic - implications for future pandemic preparedness

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Friday 22 November, 08:45, Hall 1B

Objectives
We investigated the association between non-pharmaceutical interventions (NPIs), including facemasks on the incidence of SARS-CoV-2 infection and vaccine hesitancy in UK HCWs,

Methods
We analysed questionnaire data from UK-REACH, a nationwide cohort study between 4th December 2020 to 8th March 2021. This was when a new variant of SARS-CoV-2 (B.1.1.7) was spreading in the UK, necessitating tiered restrictions, followed by a national lockdown and the first vaccine rollout.

Results
A total of 12,6888 HCWs (doctors, nurses, allied health professionals, pharmacists, healthcare scientists, ambulance workers, dental, optical and administrative) were included in the analysis; median age 45, interquartile range 38-56; female: 76%; 30% from ethnic minority groups. In multivariable logistic regression models adjusted for age, gender and ethnicity, wearing masks during lockdown (aOR: 0.85, 95% CI: 0.73-0.98); avoiding restaurants/bars/pubs (aOR: 0.78; 0.71-0.86); avoiding physical contact with people (aOR:0.82; 0.73-0.93) and using hand sanitiser more than usual (aOR: 0.84, 0.75-0.95) were associated with a decrease in risk of SARS-COV-2 infection. The same factors were associated with a decrease in risk of vaccine hesitancy. Wearing a facemask was highly associated with all NPIs.

Discussion
Facemasks and hand sanitisers are the least invasive NPIs that reduce the risk of SARS-CoV-2 infection in UK HCWs. Facemask use is also associated with the use of other NPIs that reduce infection; HCWs who adopt these NPIs are also less likely to be vaccine hesitant. Our findings highlight the utility of facemasks and certain NPIs during respiratory virus pandemics, beyond a direct effect on reduction of transmission.

146: Drains, Sinks and Unblocking links - The secret life of Drain Tools and two consecutive Hematopoietic Stem Cell Transplant unit CPE outbreaks.

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Friday 22 November, 08:45, Hall 1B

Background: Carbapenemase-producing Enterobacteriales (CPE) present an existential threat to the safety of patients undergoing Haematopoietic Stem Cell Transplant (HSCT).

Aim: To describe the investigation and successful control of two consecutive CPE outbreaks on a HSCT unit in a new build, single-patient room hospital.

Methods: Following a nosocomial bacteraemia on the HSCT unit with an NDM-producing Enterobacter, we began an outbreak investigation. We undertook a retrospective look-back and weekly CPE screening for active case finding, performed an environmental review, ATP and microbiological testing of the ward, patient rooms, bathrooms, kitchen and gathered data on drain blockage reports. Control measures were implemented: enhanced cleaning, patient isolation, improved preventative maintenance of drains, as well as changes to drain unblocking equipment and procedures.

Findings: In total, there were 14 cases of CPE linked to the ward, including one bacteraemia. Two new cases of NDM-producing Enterobacter had separate historical links, confirmed on typing. Increased drain blockages and insufficient frequency of preventative drain maintenance correlated strongly with the beginning of the outbreak. Following control of the initial NDM outbreak, a second outbreak of KPC-producing Klebsiella occurred over one week (6 patients in adjacent rooms; identical on typing), likely the consequence of a significant transmission event, arising from blocked patient sinks and shower drains, remediation with shared tools (drain unblocking tools) and insufficient environmental decontamination post-remediation, resulting in a substantial environmental bioburden.

Conclusion: A thorough outbreak investigation identified new hidden routes of CPE transmission between patient drains that may have inadvertently contributed to an outbreak of CPE.

276: Outbreak of OXA-244-producing Escherichia coli ST648 colonisation in a haemodialysis unit – a sentinel event in a wider phenomenon.

Friday 22 November, 08:45, Hall 1B

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Introduction:
The OXA-244 carbapenemase is a derivative of the OXA-48 CPE enzyme encoded by the blaOXA-244 gene and has been mainly identified in Escherichia coli with various sequence types. E. coli Sequence Type (ST) 648 is associated with multidrug resistance, genetic markers of virulence and a propensity to spread in the healthcare setting. The healthcare system in Ireland operates a high level of testing for asymptomatic carriage of CPE with all newly detected isolates submitted for sequencing.

Outbreak:
In January 2024, a CPE outbreak was declared in a haemodialysis unit at a tertiary hospital in the West of Ireland following detection of 5 newly colonized patients. Whole genome sequencing identified all isolates as E. coli ST648 expressing blaOXA-244 designated to cluster EC24-001. Simultaneously, the National CPE Reference Laboratory identified additional isolates in EC24-001 from healthcare facilities nationwide. The haemodialysis unit outbreak occurred in a wider context of national dissemination of this clone since late November 2023, with one related isolate from May 2023. Relevant Public Health Agencies and Consultant Microbiologists were alerted. An EU wide alert through ECDC did not identify isolates reported outside Ireland. Transmission has not been interrupted to date with 64 isolates identified from 18 sites nationally, most recently on May 24th. Limited clinical data available suggests cases had varying degrees of healthcare exposure. Collection of additional clinical data is underway.

Conclusion:
Multi-site transmission of this clone has continued for over 6 months despite raised awareness, suggesting high levels of healthcare transmissibility and potential for international dissemination.

177: Characterisation and clinical impact of imported malaria in an ethnically diverse and socio-economically deprived area of London.

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Friday 22 November, 08:45, Main Auditorium

Background

Malaria is a life-threatening, but preventable disease. North Middlesex University Hospital serves a large population within Northeast London, that is ethnically diverse, with significant socioeconomic and health inequalities. With over 65% of residents from non-White British communities, our hospital sees numerous imported infections annually, of which malaria is predominant.

Aims

Characterise our malaria population, focusing on travel, demographic, and socio-economic factors that may be contributing to the severity of the disease.

Compare our data with other areas of London, and to target interventions that meet the needs of our local population.

Methods

All cases of malaria within a period of eighteen months were retrospectively analysed. Demographic, travel and clinical data were collected, including comorbidities, index of multiple deprivation, and severity. Severe malaria was defined by a parasitaemia >2%, and or the presence of clinical complications.

Results

We identified 69 patients, the majority were African/African-British, predominantly males, the mean age was 43 years. Regions of travel were West Africa predominantly, followed by East, Central and South Africa. Nearly half of the patients presented with severe malaria. Plasmodium falciparum was the predominant species. Only one patient adhered to malaria prophylaxis. More than half the patients (56.5%) were within the most deprived quintiles of the population.

Conclusions

The clinical impact of malaria in our returning travelers is significant and is likely affected by the burden of health inequalities and social deprivation. Understanding our unique malaria population is of paramount importance towards implementing interventions aimed at reducing the burden of the disease.

185: Application of a novel whole-genome sequencing comparison tool provides new insights in clinical outbreaks in a healthcare setting

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Friday 22 November, 08:45, Hall 1B

Background: Correct outbreak identification is essential for optimal infection prevention and control (IPC). Whole-genome sequencing (WGS) provides unprecedented insights into healthcare pathogen transmission but is reliant on high levels of accuracy. We apply a novel WGS comparison tool to clinically suspected outbreaks and highlight potential impact.

Methods: Routinely collected S.aureus, E.coli, K.pneumoniae, P.aeruginosa isolates from a large healthcare institution underwent WGS. Genomic data were analysed using Genpax Ltd technologies; a species-centric, high-resolution, reference-free, automated genomic comparison tool. Results were applied to clinically-suspected outbreaks and putative impact on IPC was inferred.

Results: Between March 2023 and May 2024, WGS comparisons were applied to 8 clinically suspected outbreaks. 1 outbreak (K.pneumoniae OXA-48) was confirmed by WGS, supporting IPC approaches. 7 outbreaks (K.pneumoniae(1), P.aeruginosa(2), E.coli(1), S.aureus(3)) were, however, ruled out as the isolates were highly unrelated.
In another 7 instances, highly-related isolates (<17 single nucleotide variants, SNVs) were retrieved from other patients not identified as part of suspected outbreak, suggesting undetected transmissions requiring further investigation. Additionally, we identified 5 instances where isolates from other patients exhibited low-level diversity (31-95 SNVs), being inconsistent with short-term transmission and likely revealing locally epidemic strains.

Conclusion: Our data suggests most clinically-suspected outbreaks were incorrectly assigned, potentially leading to IPC resource overuse. Multiple putative undetected transmissions were identified requiring further evaluation to establish relevance and impact. Furthermore, the high-level genomic discrimination reveals novel understanding of local strain epidemiology. Together, this study highlights the potential impact of highly-accurate genomic comparison tools on patient care and healthcare resource.

58: Evaluating the utility of serological Mpox assays for their use in serosurveillance and assessing responses to infection and vaccination

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Friday 22 November, 08:45, Hall 1C

Objectives:
The 2022 global Monkeypox virus (MPXV) outbreak, led to the development of multiple serological assays. Despite implementing vaccinations to individuals at highest risk, cases continue to emerge globally, highlighting the need for advanced tools in serosurveillance, diagnostics, and assessing immune responses. This study investigates the performance of two multiplex and a singleplex Orthopoxvirus immunoassay.

Methods:
We conducted a comparative analysis of three assays: a commercially available 10-plex Orthopoxvirus electrochemiluminescence assay (Meso Scale Discovery (MSD)), 12-plex Luminex assay (MpoxPlex) and a pooled antigen Mpox ELISA. We derived sensitivity and specificity from paediatric negatives, MVA-BA vaccinated, and Mpox-infected (Clade IIb) individuals. Received Operating Characteristic curves were used to assess assay thresholds.

Results:
All assays achieved a sensitivity >93% and specificity >94% for distinguishing between vaccinated and Mpox-infected individuals from negatives. The MpoxPlex assay demonstrated the highest sensitivity of 98% and specificity of 95%; the MSD assay sensitivity was 93% and specificity 94%; the pooled ELISA sensitivity was 96% and specificity 98%. We observed comparable antibody response profiles between vaccination and infection in all assays, with MPXV A29 eliciting higher responses in convalescent versus vaccinated individuals.

Discussion
While the pooled ELISA showed higher accuracy than MSD, it is resource-intensive and cannot distinguish between antigen responses. Both multiplexed assays are advantageous by evaluating multiple antigens simultaneously, with the MpoxPlex assay providing additional benefit by distinguishing between responses to infection and vaccination.

Overall, this study offers valuable insights into the best use of serological testing to benefit ongoing research, vaccine efficacy, and public-health responses.

262: Helminth screening in IL-5 inhibitor therapy: what we know and where we need to go

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Friday 22 November, 08:45, Main Auditorium

Interleukin-5 (IL-5) plays an integral role in eosinophil production and survival, and targeting it may regulate eosinophilic inflammation. Mepoliozumab, reslizumab and benralizumab are monoclonal antibodies and IL-5 inhibitors licensed for adult-onset eosinophilic asthma. There are concerns that IL-5 inhibition also affects host response to parasitic infection and manufacturers advise treatment of pre-existing helminth infections before therapy. This has resulted in a noticeable increase in requests for rare parasite serologies to the Hospital for Tropical Diseases Parasitology Laboratory at Health Services Laboratories (HSL).

We searched Cochrane Library, MEDLINE, EMBASE, Pubmed, Google Scholar for studies published between 2004 and 2024. We also audited parasite serology requests to the HTD Parasitology Laboratory over May-June 2024.

In vivo studies showed a heterogeneous role for eosinophils in helminth infection with no clear effect on infection in mice. Multiple trials and a recent meta-analysis identified no clinically relevant increased infection risk in patients receiving IL-5 inhibitors. 0.65% (15/2300) of serology requests received at HSL were specifically labelled as pre-IL-5 inhibitor screening. Most commonly requested serology was strongyloides, alongside schistosomiasis, trichinella, filaria and toxocara.

Despite theoretical increased susceptibility to parasitic infection with IL-5 inhibitors, there is no evidence of increased cases across available literature. We propose a structured testing approach prior to IL-5 inhibitor therapy whereby only strongyloides serology and stool microscopy be examined, and other parasites screened if epidemiological/ exposure risks. Further steps involve a consensus guideline following involvement of tertiary Respiratory centres. Ongoing surveillance is recommended due to limited and short-term data on drug exposure.

217: Addressing the Social Determinants and Consequences of Tuberculosis (ASCOT): Feedback from a Four-Arm Randomised Controlled Pilot Trial of Socioeconomic Support for TB-Affected Households in Nepal

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Friday 22 November, 08:45, Main Auditorium

Objectives
The World Health Organization's End TB Strategy recommends socioeconomic support for TB-affected households but evidence from low-income settings is limited. This pilot randomised-controlled trial assessed the feasibility and acceptability of a socioeconomic support intervention for TB-affected households in Nepal.

Methods
The trial was conducted in four TB-endemic districts, targeting 32 participants per arm (control, social, economic, socioeconomic), with a 1:1:1:1 randomisation ratio. Social support included TB education, home visits and peer-led TB clubs; economic support involved unconditional cash transfers; the socioeconomic arm combined both. Feasibility was evaluated through recruitment and survey completion. Acceptability was assessed through participant satisfaction with, and feedback related to the intervention activities.

Results
A total of 132 participants were recruited, and of these, 120 (91%) completed all feedback surveys: control (n=29), economic (n=30), social (n=30), and socioeconomic (n=31). High intervention activity completion rates and positive feedback were observed for home visits (100% completion by participants in social and socioeconomic arms, and 77% and 90% rated good/very good, respectively), TB clubs (87% and 97% completion in social and socioeconomic arms; 88% and 87% rated very good/good, respectively), and cash transfers (100% completion in economic and socioeconomic arms; 87% and 90% rated good/very good). Participants reported benefits such as reduced financial burden, reduced stigma through sharing, positive reinforcement and motivation, and improved TB knowledge.

Conclusion
The ASCOT pilot trial showed that socioeconomic support was feasible and acceptable for TB-affected households in Nepal. These findings support a larger-scale trial to evaluate the support interventions' impact and scalability.

211: Investigating the stability of Cefepime for continuous infusion via elastomeric pumps for outpatient parenteral antimicrobial therapy (OPAT)

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Friday 22 November, 08:45, Hall 1C

Background: Outpatient Parenteral Antibiotic Therapy (OPAT) uses elastomeric pumps (EMP) to administer antibiotics to patients outside the hospital. Cefepime, a 4th generation cephalosporin, treats complex infections. However, the extended stability data for cefepime in EMPs has not been tested according to the Yellow Covered Document (YCD) to date. This study tests cefepime stability against YCD and ICH guidelines to assess its suitability for OPAT use.

Methods: A validated high-performance liquid chromatography method was used to assess the stability of cefepime diluted in NaCl 0.9%, stored at 4, 25, and 32°C in an EMP (Accufuser). We tested 10ml extracts from a reconstituted vial of cefepime at a concentration of 40mg/ml at 0, 6, 8, 12, and 30 hours. The YCD permitted a 5% deviation from the initial concentration. We tested three production batches for each time point and temperature and calculated the mean average.

Results: Over 95% of the initial cefepime concentration (40mg/ml) remained after 33.8 hours at 4°C and 28.0 hours at 25°C in the EMP. At near-body temperature (32°C), >95% concentration maintained at 12 hours but this declined to 90% at 30 hours.

Conclusion: Cefepime diluted in NaCl 0.9% was stable for over 24 hours at temperatures up to 25°C. At 32°C, the initial cefepime concentration dropped below 95% after 30 hours (90%). We advise repeat testing to confirm cefepime's stability at 32°C for 24 hours, to verify its suitability in EMP for OPAT. Until then, temperatures of EMP should be regulated to ensure they do not exceed 25°C.

10: Co-trimoxazole induced hyperkalaemia in patients with complex infections

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Friday 22 November, 08:45, Hall 1C

Introduction:
Co-trimoxazole is classed as an 'ACCESS' antibiotic by WHO, and promoted by the Scottish Antimicrobial Prescribing Group (SAPG) as part of a strategy to reduce use of co-amoxiclav and quinolones, mitigate antimicrobial resistance, and reduce C. difficile infection. Its use for these indications was adopted in NHS Dumfries and Galloway (NHS D&G) in 2020.
Co-trimoxazole is also known to cause hyperkalaemia. We investigated the incidence of hyperkalaemia in patients receiving co-trimoxazole for complex infections in NHSD&G.

Methodology
Retrospective cohort study including patients receiving co-trimoxazole from NHSD&G OPAT and diabetic foot MDT services between 2020-24 (N=55). Data collected on co-morbidities, medications, and demographic factors. We calculated the incidence of hyperkalaemia, complications, and identified risk factors using logistic regression. Hyperkalaemia was defined as an acute rise in serum potassium to >5.5mmol/L.

Results
10 patients (16.7%) developed hyperkalaemia. 6 patients (10%) required emergency hospitalisation. Factors associated with increased risk of hyperkalaemia were pre-existing renal impairment (OR 8.16, 1.58-54.23, p=0.01693) and older age (OR 5.12, 1.18-30.18, p=0.041).

Discussion
A high proportion of studied patients developed hyperkalaemia, and a high proportion in turn required hospitalisation. Renal impairment and older age were associated with higher risk of hyperkalaemia.

So what?
Patients and clinicians should be aware of the high risk of co-trimoxazole-associated-hyperkalaemia. We suggest that clinicians should consider prescribing an alternative antibiotic in older patients, and those with pre-existing renal impairment. Future research could assess reduced dose regimens in this population, or co-prescription of potassium binders. A larger cohort would help further characterise risk factors.

102: Personalised risk prediction tools for cryptococcal meningitis mortality with potential to guide treatment stratification; a pooled analysis of two randomised-controlled trials

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Friday 22 November, 08:45, Main Auditorium

Background
Cryptococcal meningitis is a leading cause of meningitis in sub-Saharan Africa with high mortality rates. Practical tools to stratify mortality risk may help to tailor effective treatment strategies.

Methods
Using data from two randomised-controlled trials of HIV-associated cryptococcal meningitis across eight sub-Saharan African countries, we developed and validated multivariable logistic regression models for 2-week mortality. A ‘Basic’ model was developed using predictors available in resource-limited settings; a ‘Research’ model was developed from all available predictors. We used internal-external cross-validation to evaluate performance across countries within the development cohort, before validation of discrimination and calibration in held-out data. We also evaluated whether treatment effects in the trials were heterogenous by predicted mortality risk.

Findings

In the development cohort (n=1263), five variables were selected into the basic model (haemoglobin, neutrophil count, ECOG performance status, GCS and treatment regimen), with two additional variables in the research model (CSF quantitative culture and opening pressure).
In held-out validation (n=225), both models demonstrated good discrimination (areas under the receiver operating characteristic curves 0.78 (95% CI 0.70-0.87) and 0.85 (0.79-0.92) for the 'Basic' and 'Research' models, respectively). Calibration was generally good but showed some over-prediction of risk at high risk levels.
In exploratory analyses, treatment effects were heterogenous by predicted mortality risk, with a trend towards lower relative mortality for a single-dose AmBisome-based regimen (in comparison to 1-week Amphotericin B plus flucytosine) among lower risk participants in Ambition-cm.

Interpretation
Both models accurately predict mortality and have potential to be incorporated into future treatment stratification approaches.

210: From Colonization to Invasion: Genomic and Phenotypic Comparison of Faecal and Bloodstream Isolates of Gram-negative Bacteria

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Friday 22 November, 08:45, Hall 1B

Background: Gram-negative bloodstream infections (GNBSI) contribute significantly to global sepsis burden. Gut colonisation is a known reservoir for GNBSI, and identifying adaptations that occur during transition from gut coloniser to bloodstream pathogen is critical to understanding GNBSI pathogenesis.
Objectives: This study investigates genomic and phenotypic changes between paired Gram-negative isolates obtained from faeces culture and blood culture of the same patient, to identify adaptations occurring in transition to bloodstream invasion.
Methods: Five sets of paired isolates (2 Klebsiella pneumoniae, 3 Escherichia coli) were obtained from paediatric patients. Whole genome sequencing of isolates using Illumina sequencing platform and short-read assembly was performed. Bioinformatic comparison of genomes for average nucleotide identity and multi-locus sequence typing was used to confirm genomic similarity. VirulenceFinder 2.0 was used to compare virulence profiles. Biofilm formation was assessed by crystal violet staining and fitness was evaluated in nutrient-rich and nutrient-poor media. Comparative genomics using Breseq was undertaken to identify mutations that occurred between faecal and blood isolates.
Findings: Faecal-blood pairs were highly genomically similar, supporting the gut as the GNBSI source. No acquisition or loss of virulence genes was observed. All blood isolates had increased relative fitness in nutrient-poor media, compared to faecal counterparts, and 4/5 blood isolates demonstrated increased biofilm formation. Comparative genomics revealed that all pairs demonstrated mutations in genes associated with cellular transport and metabolism and mutations in at least one known virulence factor.
Conclusions: Complex and varied genomic and phenotypic adaptations occur during gut-to-blood transition which warrant further study to understand GNBSI pathogenesis.

253: A quantitative real world correlate of protection against SARS CoV-2

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Friday 22 November, 08:45, Hall 1C

Background
Infection with and vaccination against SARS-CoV-2 induce neutralising antibodies, able to block viral replication. Whilst antibody levels are known to correlate in general terms with protection against disease, the quantitative relationship between neutralising antibody titre and risk of SARS-CoV-2 infection remains unclear.
Methods
We conducted a nested case-control study within the TRACK-COVID cohort of 19,036 UK blood donors. 360 incident cases of SARS-CoV-2 infection were each matched to 3 uninfected controls, based on age (+/- 5 years), sex, geographic region and calendar time. Serum neutralising antibody titres at 50% inhibition (NT50s) against the relevant SARS-CoV-2 variant were measured using a high-throughput, live virus assay, calibrated against the 1st and 2nd WHO International Standards.
Results
NT50s were lower in cases than controls (p=0.001). Any detectable neutralising activity was associated with protection against SARS-CoV-2, with NT50s of approximately 300 (equivalent to 183 IU/ml for wildtype virus) and 1,800 (1,098 IU/ml) reducing the odds of infection by 50% and 75%, respectively. Exploratory analyses did not suggest an impact of variant or vaccine type on this relationship.
Conclusions
To our knowledge, this is the largest study of its kind to date, including multiple variants and a gender-balanced, working-age population immunised with a mixture of vaccine types. The real-world thresholds of protection established here provide an opportunity to develop a clinically useful test for COVID-19 immunity.

95: Continuing the battle against Gram-negative Bloodstream Infections

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[1]UKHSA

Friday 22 November, 08:45, Hall 1B

Background:
To combat the growing antimicrobial resistance (AMR) threat, reducing the most common and resistant Gram-negative Bloodstream Infections (GNBSIs); Escherichia coli, Klebsiella species and Pseudomonas aeruginosa, is a critical ambition of the UK government, seeing the previous target rolled over in the 2024-2029 UK AMR National Action Plan (NAP).

Methods:
The UK AMR NAP was developed in collaboration with the four UK nations, managed and co-ordinated by the Department for Health and Social Care. Fundamental changes to the previous ambition to reduce Healthcare Associated (HA)-GNBSIs in the UK by 50%, have been made. We describe the key changes, rationale, positives and challenges.

Results:
The new target, 'The UK will prevent an increase in GNBSIs by 2029, against a 2019/20 baseline', broadens the setting to all cases not just healthcare-associated. Community associated (CA) cases in England account for around 60% of GNBSIs, driven by E. coli (65%). Although the new target aims to prevent an increase rather than stipulate a reduction as previously; in effect requiring reductions to be made. Incidence of GNBSIs are already +1.5% higher (n=59,735) in financial year 2023/24 than in 2019/20 (n=58,822). Moreover, crude age and sex population projections estimate GNBSI incidence to reach 69,908 cases in 2029, equating to a required reduction of 17.2% over the time period.

Conclusion:
Deeper understanding of the various factors driving GNBSIs, particularly in the community, are needed to be able to meet this ambitious but important target. Surveillance programmes must be adapted to deliver the information needed for this ambition.

207: Novel antibiotic spectrum metrics to quantify the impact of antimicrobial stewardship

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Friday 22 November, 08:45, Hall 1C

Background

Broad spectrum antibiotics promote antimicrobial resistance and adverse patient outcomes. Antimicrobial stewardship (AMS) reduces inappropriate antibiotic prescriptions, but current tools to measure AMS are imprecise. Precision metrics to assess AMS impact are needed to guide stewardship decisions and focus resources.

Antimicrobial spectrum scores (ASC) quantify antibiotics' spectrum coverage, but their utility in measuring the impact of AMS is unknown. We hypothesised that higher baseline ASC scores predict patients most likely to benefit from AMS interventions.

Methods

We reviewed 15 months of routine AMS activity from two UK hospitals in mixed medical and surgical patient cohorts. We calculated patients' baseline ASC, days of therapy (DOT) and days of ASC (DASC) scores, and compared anticipated prescriptions in the absence of AMS review with those following AMS intervention.

Results

1030 antibiotic prescriptions were reviewed from 760 patients. AMS recommendations for antibiotic prescriptions included no changes (56%), stop (26%), switch (8%) and duration change (6.5%).

AMS reviews resulted in correlated reductions of both DOT and DASC ($r=0.85$, $p<.001$), however each DOT reduction revealed a wide range of changes in DASC.

Total pre-AMS antibiotic spectrum activity (ASC scores), but not the prescription of any one antibiotic, predicted AMS reviews that resulted in greatest reduction in antimicrobial spectrum coverage.

Conclusions

Baseline antibiotic spectrum scores may offer means to focus AMS resources for clinical benefit. Measures of antibiotic spectrum offer greater granularity than days of therapy alone as a measure of AMS impact. Future work should aim to correlate these precision metrics with disruptions to microbiome.

101: Pre-analytical sampling and processing of tongue swabs for Mycobacterium tuberculosis complex (Mtbc) impacts diagnostic yield

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Friday 22 November, 08:45, Room 4

Background
Oral swabs are an alternative diagnostic sample to detect Mycobacterium tuberculosis complex (Mtbc). Previous studies have processed samples remotely in overseas laboratories. We aimed to optimise pre-analytical sampling methods at point of collection in Blantyre, Malawi. We compared self- and healthworker-taken tongue swabs, analysed using Xpert Ultra and RT-PCR, and compared by cryopreservation method.
Method
Participants (adults with newly diagnosed sputum Xpert confirmed pulmonary TB) were randomly allocated to undergo self- or healthworker swab first. Two swabs were taken (COPAN FLOQswab in Primestore MTM media 1.5 ml) then tested for Mtbc by Xpert Ultra after storage at either room temperature or -80 C, and by RT-PCR after one or two freeze-thaw cycles.
Results
In total 100 tongue swabs were taken (50 self-taken, 50 healthworker-taken) with an overall sensitivity of 36% on Xpert Ultra and 43% on RT-PCR compared to Xpert in sputum. Samples that underwent two freeze-thaw cycles prior to RT-PCR had a significantly higher sensitivity 17/28 (60.7%) compared to one cycle 26/72 (36.1%) on RT-PCR (p=0.04). There was no difference in sensitivity between self-taken and healthworker-taken swabs.
Conclusion
When analysing tongue swabs for Mtbc additional freeze-thaw cycles may cause increased lysis leading to mycobacterial DNA release and an increase in sensitivity on RT-PCR. When swabs are transported for analysis incorporating freeze-thaw cycles, as opposed to processing at point of collection, this may increase sensitivity. This needs to be accounted for as additional feasible and affordable lysis steps may need to be added to protocols at point of collection.

109: The spatio-temporal localisation of a pan-Mucorales specific antigen: a promising immunohistochemistry target and potential biomarker for mucormycosis.

Friday 22 November, 08:45, Room 4

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Background: Mucormycosis is an aggressive, invasive fungal infection caused by moulds in the order Mucorales. Early diagnosis is key to improving patient prognosis, yet currently relies on insensitive culture or non-specific histopathology. A pan-Mucorales specific monoclonal antibody (mAb), TG11, was recently developed (Thornton et al. 2023).

Methods: Our study characterises the spatio-temporal localisation of the antigen recognised by TG11 using immunofluorescence (IF) microscopy and time-lapse imaging of Rhizopus arrhizus, and localisation in a further ten Mucorales species of clinical importance. Immunogold transmission electron microscopy (immunoTEM) reveals the sub-cellular location of mAb TG11 binding. Finally, we used mAb TG11 to perform IF of R. arrhizus and Aspergillus fumigatus in an ex vivo murine lung infection model.

Results: IF of fixed cells revealed TG11 antigen production at the emerging hyphal tip and along the length of growing hyphae in all Mucorales except Sakasenea. The TG11 mAb did not bind to ungerminated spores except Syncephalastrum. Timelapse imaging revealed early antigen exposure during spore germination and along the growing hypha. ImmunoTEM confirmed mAb TG11 binding to the hyphal cell wall only. The TG11 mAb specifically stained R. arrhizus hyphae in infected murine lung tissue, and did not detect A. fumigatus hyphae, demonstrating utility as a specific immunohistochemical stain for invasive Mucorales hyphae.

Conclusions: TG11 detects early hyphal growth and has valuable potential for diagnosing early Mucorales infection and differentiating infection from colonisation or sample contamination. TG11 enables specific histopathological detection of Mucorales in tissue and differentiates Mucorales from the main differential diagnosis, Aspergillus.

176: Collaboration across sectors to establish a nationwide programme of infection research in care-homes: Vivaldi Social Care Project

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Friday 22 November, 08:45, Room 4

Introduction
Care-homes are vulnerable to infections, antimicrobial resistance, and outbreaks, with devastating impacts. However, surveillance and research are challenging because of limited data and research infrastructure. Vivaldi Social Care (Vivaldi-SC) is a national collaborative project where care-homes share data for policy-relevant research and surveillance.

Methods
Vivaldi-SC is a partnership between academics (University College London) and adult social care sector representatives (The Outstanding Society, Care England), with involvement from ~800 care-homes so far, funded by UK Health Security Agency. Since 2022, the project has been coproduced with stakeholders. Core engagement activities consist of four main elements; monthly visits to care homes, monthly training workshops for providers, coproduction of study materials, and the 40-member engagement collective who oversee study design and implementation.

Results
Feedback has changed study design, for example, highlighting research priorities like care-home closure avoidance, and reviewing presentation of outputs. Coproduced materials include an accessible explanatory animation and comprehensive participant information with easy-read versions. Engagement collective members play a central role and feel valued: “We are delighted to represent residents and their families by giving feedback into this vital research; ensuring messaging and materials are designed to be understandable and beneficial to those being asked to participate”.

Discussion
Vivaldi-SC is a large cross-sector project designed “for social care by social care”, addressing a sizeable gap in adult social care infection research. Our engagement model represents a shift from traditional research approaches to ensure that participants’ voices shape every stage of the project journey from design to delivery and dissemination.

36: Resistance profiles of Carbapenemase-producing Enterobacterales in a large centre in England: are we already losing the newer agents?

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Friday 22 November, 08:45, Room 4

Introduction

Carbapenemase-producing Enterobacterales (CPE) pose difficult therapeutic challenges. We aimed to characterise antimicrobial resistance profiles of CPE in our centre.

Methods

All non-duplicate CPE isolates between 01/08/2020 and 31/08/2023 in a large teaching Trust in England were retrospectively studied. EUCAST version 14.0 breakpoints were used.

Results

A total of 158 CPE from 136 patients were isolated. Most patients were colonised with CPE, while only 16.9% had active infections. Patients with CPE had high rates of immunosuppression (36%), obesity (33.1%), diabetes (27.2%), solid (25%) or haematological (20.6%) malignancies. 30-day all-cause mortality was 10.3%, increasing to 13% for patients with infections and to 18.2% for bacteraemias.
OXA-48 was the most prevalent carbapenemase (48.1%), followed by NDM (38%). All isolates exhibited multi-drug resistant profiles, with high levels of resistance to meropenem (41.1%). 69.7% of NDM-producing isolates were resistant to cefiderocol, while a further 18.2% in the Area of Technical Uncertainty (ATU). Ceftazidime-avibactam and aztreonam synergy was seen in 87.5% of isolates, while colistin and fosfomycin susceptibility remained high (98.1% and 97.2% respectively). All OXA-48-producing isolates were susceptible to ceftazidime-avibactam, and 15.3% were resistant to cefiderocol. No patients had been exposed to cefiderocol beforehand, while three had been exposed to ceftazidime-avibactam. The most common risk factor for CPE isolation was travel and receiving healthcare abroad, especially in Asia.

Conclusion

We found high rates of resistance to cefiderocol in CPE isolates in our centre without prior cefiderocol exposure. Our results prohibit empirical use of cefiderocol for the treatment of CPE infections in our setting.

117: Should haematopoietic stem cell transplant recipients be pre-screened for tropical infections?

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Friday 22 November, 08:45, Room 4

Background:

Tropical infections are neglected in pre-transplant assessment for haematopoietic stem cell transplantation (HSCT) and no published standards are available internationally. Diagnosis of tropical infection post-HSCT is limited by unreliable serological tests and lack of local test availability. Our study investigates the risk of tropical infection in HSCT patients attending a large UK tertiary haematology centre, and the current level of screening offered.

Methods:

Patients undergoing first HSCT (allogeneic or autogenic) between January 2020 and March 2023 were included. Data was collected from contemporaneous electronic records on demographics, pre-transplant assessment, travel history, country of origin, undiagnosed febrile illness post-transplant, and mortality.

Results:

378 adult HSCT patients were evaluated. Travel history was documented in 90.17% (n=156) of allograft recipients and 2.44% (n=5) of autograft recipients. Of 175 allograft recipients, pre-transplant screening for TB was offered to 99% of patients using QuantiFERON-TB GOLD PLUS (Qiagen), but none were offered tropical infection screening. 11(7.1%) had a high risk country of origin, 5 underwent post-HSCT investigations, and 3% had a positive QuantiFERON-TB result. Fischer's exact test showed no association between travel risk and screening (one-tailed P = 0.573). Unknown infection accounted for 12.5%(47/378) of deaths post-HSCT.

Conclusions:

A significant proportion of HSCT patients in our study had a risk of tropical infection based on past travel or country of origin, however none received pre-transplant screening for tropical infection. It is possible that in the patients who died of unknown infections, tropical diseases may have been missed.

15: *Clostridioides difficile* spores tolerate disinfection with sodium hypochlorite disinfectant and remain viable within surgical scrubs and gown fabrics

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Friday 22 November, 08:45, Room 4

Objectives: Clostridioides difficile is the most common cause of antibiotic-associated diarrhoea globally. Its spores have been implicated in the prevalence of C. difficile infection due to their resistance and transmission ability between surfaces. Currently, disinfectants such as chlorine-releasing agents (CRAs) and hydrogen peroxide are used to decontaminate and reduce the incidence of infections in clinical environments.

Methods: This study examined C. difficile spore response to clinical in-use concentrations of sodium hypochlorite. Spores were exposed to a 10 min contact time of 1000, 5000 and 10 000 p.p.m. sodium hypochlorite, and spore recovery was determined. To understand whether biocide-exposed spores transmitted across clinical surfaces in vitro, biocide-exposed spores were spiked onto surgical scrubs and patient gowns and recovery was determined by a plate transfer assay. Scanning electron microscopy (SEM) was used to establish if there were any morphological changes to the outer spore coat.

Results: Viable C. difficile spores were recovered from surgical scrubs and patient gowns after exposure to sodium hypochlorite. No observable morphological changes to the spore coat were detected on SEM.

Discussion: The results highlight that current disinfection protocols using sodium hypochlorite at recommended concentrations may not be sufficient to eradicate C. difficile spores on personal protective fabrics. This suggests that these fabrics can act as vectors for spore transmission within clinical settings.

Conclusions: Alternative disinfection strategies should be urgently sought to effectively eliminate C. difficile spores and break the chain of transmission in clinical environments. Enhanced disinfection protocols are essential to improve infection control and patient safety.

13: Case one

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[1]North Bristol NHS Trust

Friday 22 November, 14:45, Main Auditorium

A 31-year-old female was relatively untroubled by a several year history of sporadic, localised, self-limiting arm swellings. She was more concerned when her left eye became painful, worsening over a period of two weeks, associated with retro-orbital headache and peri-orbital swelling. She was extremely alarmed when she saw a worm moving under the skin of her lower eyelid. An urgent visit to the emergency department followed.
By the time of review the worm had disappeared. Fortunately, she had recorded evidence on her phone. Further history included 5kg weight loss, intermittent joint pains and lethargy. There was no fever, no rash, no GI or urinary symptoms. Travel history was notable for multiple trips to rural Cameroon in the past 10 years, working in a Chimpanzee rescue centre. The last travel was 2.5 years previously.

Diagnosis:
A clinical diagnosis of Loasis was made, a very rare parasitic infection to see in the UK. Further workup was undertaken to confirm the diagnosis as well as exclude other filarial diseases which would have had significant implications for management.

Results:
Filiarial serology was strongly positive. A single Loa loa microfilaria was seen on multiple midday blood films. Skin snips were negative for onchocerciasis. Midnight blood films for bancroftian filariasis were negative.

Management:
Treatment was commenced with diethylcarbamazine (DEC), with eventual full resolution of symptoms. Side effects included headache and myalgia.

Learning point:
Treatment for filarial diseases can be complex with potentially fatal interactions if co-infections are missed.

118: Case two

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Friday 22 November, 14:45, Main Auditorium

Background:

Haemophagocytic lymphohistiocytosis (HLH) is a potentially fatal hyperinflammatory syndrome characterised by unremitting fever, cytopenias and progression to multi-organ failure. Secondary HLH has both infective and non-infective triggers, with increasing evidence supporting an association with Rickettsial infection. Transmitted by arthropod bites throughout the world, Rickettsia are an important cause of undifferentiated fever in the UK returning traveller. Some species are not associated with a rapid response to (usually presumptive) doxycycline and progress to HLH despite treatment, leading to uncertainty over diagnosis and optimal therapeutic agent.

Case presentations:

Case 1 presented with fever and myalgia after travel to Cameroon. Given negative initial investigations and failure to improve on Ceftriaxone, IV doxycycline was started. A diagnosis of HLH was suspected following seventy-two hours of treatment without clear clinical response and an H-score of 167. Anakinra was initiated, resulting in marked clinical improvement. Case 2 presented with fever after returning from Ethiopia. Empirical treatment with ceftriaxone was started, however, he clinically deteriorated and by day two of admission the H-score was calculated as 166. He improved rapidly after treatment with oral doxycycline and two doses of 1g IV methylprednisolone.

Discussion and conclusions:

We aim to highlight the diagnostic challenges found in both cases, and discuss key features in the presentation which should alert clinicians to a diagnosis of severe Rickettsial infection. We conclude that HLH, and therefore use of immunomodulatory therapy, should be considered in patients where severe Rickettsial infection is considered, particularly if they are slow to defervesce on treatment with Doxycycline.

150: Case Three

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[1]Sheffield Teaching Hospitals, [2]Doncaster and Bassetlaw Teaching Hospitals

Friday 22 November, 14:45, Main Auditorium

A 38 year old male was referred to his local ID unit with uncomplicated P.ovale malaria following a 3-day illness. He had arrived in the UK from Lagos, Nigeria 3 months prior. He reported an itch allergy to chloroquine.

The patient was commenced on oral artemeter-lumafantrine (Riamet®). G6PD assay was sent in anticipation of primaquine treatment for the hypnozoite phase. Quantitative levels (using Camspec_M209T Spectrophotometer) were 0.8 Iu/gHb (reference range 4.6-13.5Iu/gHb).

Current UK guidance only advises on prevention of relapse in patients with mild-moderate G6PD deficiency, the optimal management in severe deficiency is unclear.

Through infectious diseases and haematology joint discussion, the patient was offered extended course primaquine (45mg weekly/8 weeks) and counselled for the risk of severe haemolysis as well as standard dose primaquine with pre-treatment red-cell exchange (RCE). The risks quoted involved those relating to vascath insertion, alongside an ongoing risk of haemolysis (as the fraction of red cells remaining would be ~10%). An alternative 'watch and wait' approach was offered with prompt treatment of any relapse. The patient elected for the latter, in the following 18 months, he has taken one course of Riamet®, for which he did not seek any confirmatory testing or require hospitalisation.

This case highlights the difficulties in achieving radical cure for patients with severe G6PD deficiency. RCE is an option but is invasive and cannot completely negate the risks of haemolysis. In general, illness with P.ovale is mild and attempt for radical cure should be undertaken with an individualised risk-benefit approach.

178: Case Four

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Friday 22 November, 14:45, Main Auditorium

Background:
Scrub typhus is an acute febrile illness, caused by Orientia tsutsugamushi and transmitted through the bite of infected mite larvae. Imported cases are rare in the UK however an estimated 1-million cases per year occur worldwide. It is endemic across South and Southeast Asia and the Western Pacific. It has been associated with a variety of complications from mild to life threatening. However, reports of splenic haemorrhage are rare.

Case Summary:
A 38-year-old man presented to the emergency department with fever, fatigue and widespread maculopapular rash. He had returned to the UK from Hong Kong 9 days previously. Whilst in Hong Kong he went hiking in the hills. Additional history of pleuritic chest pain and raised d-dimer resulted in concern for a pulmonary embolus. He received two doses of apixaban whilst awaiting a CTPA. This identified no evidence of pulmonary embolism but noted mild splenomegaly. Initial blood test results showed mild anaemia, thrombocytopaenia, lymphopenia with raised ALT and C-reactive protein.

CT abdomen and pelvis later demonstrated the presence of moderate volume intraperitoneal haemorrhage with haematoma around the spleen, suggestive of spontaneous splenic haemorrhage. He was treated with a course of doxycycline and made rapid symptomatic improvement. Serology showed weakly reactive Scrub Typhus IgM and blood PCR was positive for Orientia tsutsugamushi DNA.

Conclusion:
Splenic involvement in scrub typhus has been reported as rare. This case describes splenic haemorrhage in the context of acute scrub typhus and highlights the need to maintain awareness for this unexpected yet potentially catastrophic complication.

Free Paper Poster Presentations

Antimicrobial agents

84: An audit of antibiotic prescribing for community-acquired pneumonia in accordance with Trust guidelines comparing documented and calculated CURB-65 scores

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Background: CURB-65 is used to determine mortality risk of community-acquired pneumonia (CAP), with scores ranging from 0-5 to indicate severity. Higher scores are managed accordingly with treatment escalation, ranging from single oral antibiotic to dual intravenous treatment.

A retrospective audit was conducted between July-December 2023 to identify if calculated CURB-65 scores corresponded with those documented; if inpatient treatment and duration aligned with guidelines; and if antibiotics were supplied on discharge. Patients were excluded if their CURB-65 score was above 2.

Trust guidelines:

CURB-65 0-1: amoxicillin for 5 days (doxycycline in penicillin-allergy)

CURB-65 2: additional clarithromycin (levofloxacin in penicillin allergy)

Audit standards:

1) CURB-65 scores for confirmed CAP are accurately documented
2) Antibiotic choice and duration (for scores <2) are in accordance with Trust guidelines

Results: 50 patients were audited. Of these, 54% (27/50) did not have their CURB-65 score documented. Where scores were noted, 87% (20/23) of these were accurate. 44% (22/50) patients received 5 days total therapy. 34% (17/50) exceeded this, reasons for which included raised inflammatory markers. Results found that prescribers were often non-compliant with the Trust's antimicrobial guidelines.

Conclusions: CURB-65 scores are largely accurate however frequent practice is required to ensure appropriate antimicrobial management. Antibiotic choices should be documented if not in accordance with guidelines.

Future developments: Promote documenting CURB-65 scores and support compliance with guidelines, facilitated by digital support tools and a visualisation of CURB-65 score in electronic systems. There is scope for further research into prescribing decisions where therapies differ from guidelines.

111: Ceftazidime/avibactam: Excellent activity against respiratory gram negatives

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[1]University Hospital Southampton NHS Foundation Trust, [2]Hampshire Hospitals Foundation Trust, [3]University of Southampton

Aims

To evaluate the activity of ceftazidime/avibactam against gram negative organisms isolated from respiratory tract samples.

Background
Patients with chronic lung diseases such as bronchiectasis and cystic fibrosis are commonly hospitalised secondary to bacterial infective exacerbation. These patients are exposed to multiple antibiotic courses and consequently their microbiota is under constant selective pressure.

Methods
This was a single centre non-interventional, prospective in-vitro study of isolates from patients with chronic lung disease. Minimum inhibitory concentrations (MIC) were determined by gradient strip. All gram negative isolates from respiratory samples from patients with chronic lung disease collected over a 2 year period from June 2018- June 2020 were included. Background information was obtained for each isolate: comorbidities, risk factors for multi-drug resistant colonisation and prior antibiotic therapy.

Results
302 clinical isolates were included from a total of 223 patients. 99% of isolates were CZA susceptible. 39.9% of patients included had been hospitalised in the last 12 months and 73.9% had had antibiotics in the preceding 3 months. 13.5% of patients were immunosuppressed. A range of gram-negatives were isolated with median MICs described. Of 8 isolates which were ceftazidime resistant all were CZA susceptible.

Conclusion
We report excellent activity of CZA against a range of respiratory isolates from chronic lung disease patients, who had high levels of recent antibiotic use and hospitalisation. In this era of multi-drug resistance, the need for novel antimicrobial agents is increasingly apparent. Ceftazidime-avibactam is a useful additional agent in the armoury for this cohort of patients with difficult-to-treat infections.

135: Can ciprofloxacin susceptibility be used to indicate levofloxacin susceptibility in clinically significant staphylococci?

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In recent years levofloxacin has become our preferred oral fluoroquinolone (FQ) for treating deep tissue staphylococcal infection at North Bristol NHS Trust. In the microbiology laboratory, clinically relevant staphylococci are routinely tested for susceptibility with Vitek2 system (bio-Mérieux, France) against a fixed panel of antibiotics, which includes ciprofloxacin but not levofloxacin. Following the MHRA safety update (January 2024) which significantly restricted the indications for use of FQs, it is important to ensure susceptibly to any given FQ if a FQ is still appropriate. Here, we sought to determine whether levofloxacin susceptibility can be reliably inferred from confirmed ciprofloxacin susceptibility in clinical staphylococcal isolates.

Between 02/03/24 – 07/04/24, 91 staphylococci (all species) isolated from blood cultures which had routine susceptibility testing were also tested against levofloxacin (5µg disc, EUCAST breakpoints). In addition, 64 staphylococci (all species) from all other infection sites (e.g., wounds, tissues) submitted for susceptibility testing were also tested against levofloxacin.

From these staphylococcal isolates, 107 (69%) staphylococci were reported as ciprofloxacin susceptible, these were all found to be susceptible to levofloxacin (by disc testing). 48 (31%) staphylococci were reported as ciprofloxacin resistant, of which, 36 were levofloxacin resistant and 12 were levofloxacin susceptible.

In conclusion, within our tested population, it is reasonable to infer levofloxacin susceptibility from reported ciprofloxacin susceptibility in staphylococci (all species). However, levofloxacin susceptibility cannot be predicted in ciprofloxacin resistant staphylococci.

224: Antimicrobial and pharmaceutical properties of antimicrobial-loaded calcium sulfate composites for diabetic foot osteomyelitis caused by E. coli and P. aeruginosa

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Background: Diabetic foot osteomyelitis (DFO) results in limb amputation, reduced quality of life, and early mortality, with antimicrobial resistant (AMR) organisms becoming an increasing problem within DFO management. Here we report the antimicrobial and pharmaceutical properties of antimicrobial-loaded calcium sulfate composites for the targeted treatment of AMR DFO.

Methods: Calcium sulphate alpha-hemihydrate (Stimulan® Rapid Cure 5cc) beads containing 120 mg gentamicin, 500 mg ciprofloxacin, or 200 mg (2.5 MU) colistin were tested against Pseudomonas aeruginosa (NCTC6750 and an extensively drug-resistant clinical isolate from DFO) and Escherichia coli (NCTC8196) over time, using an adapted EUCAST disk-diffusion methodology. Dose uniformity testing was undertaken to further characterise these composites.

Results: Setting times were 5, 10, and 30 minutes for gentamicin, colistin, and ciprofloxacin, respectively. Ciprofloxacin was released continuously and zones of inhibition (ZOI) remained consistent against all species, including the ciprofloxacin resistant P. aeruginosa, over a ten-week period. Gentamicin and colistin underwent burst-release with subsequent drug-release and ZOIs decreasing rapidly over a 3-week period. Ciprofloxacin bead content was more uniform (10.7% variation) than gentamicin and colistin (48.0% and 133.6% variation, respectively).

Conclusions: Gentamicin, colistin and ciprofloxacin calcium sulfate beads may provide useful targeted therapies for AMR DFO. Future work should focus on different mixing methods for making calcium sulfate beads to determine effects on dose uniformity. More work is required to understand the clinical utility of ciprofloxacin in these composites, particularly considering the available formulations.

247: The antimicrobial properties of calcium sulfate composites against clinical strains of Stenotrophomonas maltophilia from diabetic foot infections

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Background
Stenotrophomonas maltophilia is an opportunistic multi-drug-resistant Gram-negative bacterium implicated in diabetic foot infections (DFI). Antimicrobial-loaded composites are increasingly used in DFI, to provide high-concentrations of antimicrobials direct to the site of infection. This research aimed to determine the properties of antimicrobial-loaded calcium sulfate composites for the management of S. maltophilia DFI.

Methods
Calcium sulfate alpha-hemihydrate (Stimulan®) was loaded with gentamicin, a validated antibiotic; or three non-validated antibiotics co-trimoxazole, amikacin, and ceftazidime. Adapted EUCAST disk-diffusion methodology was used, whereby composite pellets were transferred onto newly inoculated plates at regular intervals over a 6-week period. Two clinical isolates of S. maltophilia were used (Smalt1 and Smalt2).

Results
Pellets containing gentamicin and amikacin set within 10 minutes. Co-trimoxazole rapidly set within 3 minutes but was challenging to spread into the setting-mould. Ceftazidime did not set within an acceptable time, taking over 2 hours. Ceftazidime pellets underwent colour and physical changes, suggesting chemical reaction between the components.

Gentamicin pellets produced zones of inhibition (ZOI) against Smalt1 but not Smalt2, while amikacin produced ZOI against both strains. However, the aminoglycoside ZOI rapidly diminished. Co-trimoxazole pellets exhibited excellent activity against both strains, which was sustained over a longer period.

Conclusions
Co-trimoxazole loaded calcium sulfate composites may be a useful alternative for the management of DFI caused by S. maltophilia but further research is needed to optimise formulation and characterise the pharmaceutical properties. In addition, research will be undertaken to fully elucidate the ability of antimicrobial-loaded calcium sulfate composites to overcome saturable resistance mechanisms.

273: Treatment of carbapenem/colistin-resistant and MDR bacterial Respiratory Tract Infection using a novel broad-spectrum antiseptic-based antimicrobial (ABA) agent delivered as a single-dose, rapid-delivery therapeutic in a lung-infection model

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Antimicrobial-resistance (AMR) in bacteria causing respiratory-tract-infections (RTIs) increases morbidity/mortality and diminishes treatment options globally. Alternatives to antibiotics and novel therapeutics are lacking. We demonstrate the efficacy of a novel antiseptic-based antimicrobial (ABA) with cell/tissue-compatibility and non-toxicity, for the treatment for bacterial RTIs, using a single-dose delivered directly or aerosolisation in a lung-infection model

Antimicrobial efficacy of ABA was assessed against carbapenem/colistin-resistant, and multidrug-resistant (MDR) (clinical/type) strains: Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, S. aureus, S. pyogenes, H. influenzae, S. pneumoniae and B. cepacia targeting 5-log10 reductions. Infection loads (~107 CFU/mL bacteria) comprising synthetic mucous (5% horse serum and 0.4% mucin) or control secretion (phosphate buffered saline). Infections were exposed to treatments for: 0.25, 1, 5, 10, 15, 30min.

Direct-delivery treatment/lavage: Infection loads (n=6) representing lung infection were treated with ABA-(0.1%v/v), and comparator test agents (Peracetic Acid [PA-0.1%v/v]) and (Chlorine [Ch; control-0.1%v/v]) in parallel assays as markers of efficacy.

Aerosolised treatment: ABA (0.03% or 0.1%v/v concentrations) was aerosolised (OMRON-NE-C28P nebuliser), and delivered to an in-vitro lung-infection model: infection loads seeded onto coupons suspended in a 500mL chamber.

ABA eliminated all bacterial-infection below detection (>5-Log10 reductions) within 15-seconds using single-dose treatments (direct-delivery treatment/lavage) or within 15-minutes (aerosolised-treatment; LoD-4CFU [<0.60-Log10]). ABA was not attenuated by mucous ($P<0.05$) and effective (>5-Log10 reductions) at low-(0.03%) concentration, suggesting suitability in Lower-RTIs and heavy pus/mucous infections (Cystic-Fibrosis).

ABA demonstrates broad-spectrum ability to eradicate MDR and Carbapenem/Colistin-resistant bacterial RTIs through-non-invasive short (15sec) single-dose treatments or by lavage (direct-delivery) in difficult-to-treat lung infection.

277: To IVOS or not to IVOS: A retrospective cohort study looking at when patients initiated on piperacillin/tazobactam, teicoplanin, IV amoxicillin and IV co-amoxiclav were switched from IV to oral therapies after meeting 2022 UKHSA Antimicrobial intravenous-to-oral switch criteria

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Background

There is increasing evidence that oral antibiotic administration is as effective as intravenous (IV) for most presenting infections. Despite this IV therapies are the mainstay of suspected infections requiring admission. IV therapies have several downsides: additional routes for infection, increased cost and increased staff workload. In 2022, the UK Health Security Agency (UKHSA) published guidance to aid clinicians to implement IV-to-oral switch (IVOS).

Aims

1. Evaluate compliance of IVOS when patients admitted to hospital fulfilled UKHSA criteria.
2. Record IVOS agents and rationales for delays.
3. Examine patient outcomes associated with IVOS, including recurrence rates, length of hospital stay and complication rates.

Methods

A retrospective cohort study was conducted by reviewing patient notes. Over a one-month period, 100 patients met inclusion criteria and their patient journeys were reviewed. Data was entered into a spreadsheet and analysed.

Results

52 patients met UKHSA IVOS criteria with 39 (75%) having IVOS completed within 6 hours of criteria attainment. 30 patients were diagnosed with UKHSA special consideration infections, of these 20 (67%) completed IVOS within 24 hours after meeting all other criteria. The most common rationale for delayed IVOS was a ‘wait and see for 24 hours’ approach. The most common IVOS choice was amoxicillin (21%). The average length of stay was 6.3 days, 3 patients that completed IVOS were readmitted within a week for a similar infection.

Conclusions

This study demonstrated that a high proportion of patients, including those with special consideration infections, can safely complete IVOS with low complication rates.

Antimicrobial resistance

4: Analysis of Carbapenem Resistant Gram Negatives Over a 2 Year Period

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Introduction

National guidance is to screen all high risk patients for organisms with carbapenemase genes. Initially this was with three samples however, the recommendation was changed to single samples. Historically all samples were cultured but direct PCR speeds up the time to CPE identification from 18-24 hours to <1hour. PCR testing runs a small risk of missing carriers of unusual genes not included in the assay.

The desire locally is to move to single sample direct PCR to reduce time to detection. The local epidemiology of carriage and techniques were reviewed to assess the safety of this.

Methods

Data on rectal samples received in a 24 month period was gathered including number of separate screenings and number of samples, CPE species, resistance mechanisms, and proportion of samples from which a non CPE was isolated.

Results

CPE were identified from 15 patients from whom 19 individual CPE bacterial species were isolated. One patient had three NDM strains and two had two Oxa 48 strains.
The direct PCR was positive on the first sample received on all patients. Taking first samples only, the direct PCR had a 100% sensitivity and 100% specificity (CI 98.5-100).

Conclusion

The incidence of CPE colonised patients locally is low, ~1.5%. Over 24 months only 15 patients were identified as colonised.
One admission sample appears to be sufficient to identify carriers rather than the currently employed three.
Direct PCR identifies the common gene targets but not all resistance mechanisms, without direct culture certain potential strains may be missed.

9: From Farm to Fork: Assessing the Impact of Antibiotic Residues in the UK Foods on Public Health

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Objectives: This study aimed to investigate antibiotic residues in animal products could induce antimicrobial resistance (AMR) to E. coli in human duodenal environment via diet using the Hollow Fibre Infection Model (HFIM).

Methods: Triplicate of 51 food and drink products were tested for ten residual antibiotics using Liquid Chromatography-Mass Spectrometry (LC-MS). Antibiotic intake concentrations were predicted based on a dietary survey of 131 participants and the measured antibiotic concentrations in foods. The HFIM simulated daily antibiotic exposure in the duodenal environment over eight days, with E. coli resistance monitored via minimum inhibitory concentration (MIC) testing and transcriptomic analysis, GO and KEGG pathway.

Results: 12 products exceeded the maximum residue limit for amoxicillin, ampicillin, and enrofloxacin. The MIC of E. coli has been increased 64-folds after the antibiotic exposure. luxS, lsr, and wca systems were significantly ($p<0.05$) up-regulated in biofilm formation (quorum sensing and exopolysaccharide biosynthesis). Also, fucose metabolism (fucI and fucK), and fructose and mannose metabolism (scrK and manA) were significantly activated.

Discussion: Polysaccharide intercellular adhesion might have increased MIC by enhancing horizontal gene transfer during biofilm maturation. Specifically, polysaccharide synthesis locus in fructose and mannose metabolism might have enhanced enrofloxacin resistance by binding to eDNA in the cell. Moreover, binding between lsrR or lsrK genes with autoinducers in quorum sensing might have increased the beta-lactam antibiotic resistance.

Conclusion: Chronic exposure to low-level antibiotics in diet could accelerate AMR in human gut bacteria through biofilm formation. These findings emphasize the importance of monitoring and reducing antibiotic residues in foods.

11: In vitro susceptibility testing of cefiderocol and plazomicin against clinical isolates of ESBL-producing Salmonella species

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Background
Typhoidal Salmonella is responsible for causing significant global morbidity and mortality, particularly in developing countries. Over the last decade, the emergence of multidrug-resistant strains against conventional and advanced treatment options represents a real threat to disease control and prevention. Cefiderocol and Plazomicin are novel antimicrobials with potent activity against Gram negative bacteria including multidrug resistant organisms with paucity of available data regarding their antimicrobial activity against resistant Salmonella.

Material
Between 2018-2020, 151 confirmed cases of Salmonella infections were identified from acute care hospitals in Qatar, out of which a total of 34 (22.5%) ESBL-producing Salmonella species were identified including 15 (10%) which were blood stream infections. Using E test (Liofilchem®) for cefiderocol and plazomicin according to recommendations , the antimicrobial susceptibility tests (AST) of isolates were evaluated against the novel antimicrobials .

Results
The in-vitro AST of cefiderocol and plazomicin for ESBL-producing Salmonella infections were 100% (34/34) and 97% (33/34) respectively (Table 1) while the MIC50 and MIC90 for cefiderocol and plazomicin were 0.016 and 0.023 (range 0.016–1.5) and 0.75 and 0.75, respectively (range 0.25–3).

Conclusions
For ESBL-producing Salmonella infections, Cefiderocol and plazomicin demonstrated potent in-vitro activity profiles suggesting potential alternative therapeutic options for the clinical evaluation of the novel agents

16: Patterns of antibiotic susceptibility among Invasive group A Streptococcus infections at a Tertiary Care Teaching Hospital

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Introduction:
Group A Haemolytic Streptococcus (GAS) is a significant pathogen responsible for a range of infections from mild pharyngitis to severe invasive diseases such as necrotizing fasciitis and toxic shock syndrome. Treatment of severe GAS require appropriate and timely antibiotics. The increasing rates of antibiotic resistance pose a challenge to clinical management and public health. Understanding local resistance patterns is crucial for guiding appropriate antibiotic therapy and for the development of effective antimicrobial stewardship programme.

Aim:
The aim of this audit was to review the local antimicrobial susceptibility pattern of GAS isolated from normally sterile sites or wounds in patients with necrotizing fasciitis.

Method:
Samples including blood cultures, pleural fluid samples and deep tissue/intra-op samples that yielded GAS from January 2023 to December 2023 were reviewed using trust's databases. Each isolate was tested for susceptibility to penicillin, moxifloxacin, co-trimoxazole, clindamycin, clarithromycin, and doxycycline.

Results:
A total of 82 GAS isolates were reviewed. The susceptibility of the isolates to penicillin, moxifloxacin and co-trimoxazole was 100%. The resistance rate to doxycycline was 34% (28 isolates) and to Clindamycin and Clarithromycin was 22% each (11 isolates). These results highlight a high resistance rate to doxycycline, whereas penicillin, moxifloxacin, and co-trimoxazole remained fully effective against all isolates.

Conclusion:
There is a significant resistance to doxycycline, which affects more than one-third of the isolates. These results underscore the importance of continuous surveillance of antibiotic resistance patterns to guide empirical therapy and inform local antibiotic stewardship strategies.

18: MRSA infections - do we know what we treat?

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Background

Previously, MRSA infections have mostly been healthcare-associated, but in recent decades community-associated MRSA (CA-MRSA) cases have become increasingly common. Despite the known risk factors of CA-MRSA, drug-resistant pathogens are not often suspected nor recognized in clinical practice in low-endemic settings, and β-lactams are used for empiric therapy. This may cause delay and additional costs in treatment.

Materials and methods

All new MRSA cases (n=983) detected during 2007 - 2016 in Hospital District of Southwest Finland were retrospectively analyzed. In 280 cases, MRSA was first detected in a clinical specimen. Data on empiric and adjusted antibiotic treatments of these infections and of their outcomes were collected from eletronic health records, but was, unfortunately, in many cases scarce.

Results

The data of empiric treatment was obtained in 46.8% (131/280) of the cases. Of them, 81.7% (107/131) received ineffective antibiotics. Treatment after confirmation of diagnosis was obtained in 49.3% (138/280) of the cases. In 34.1% (47/138) of them was the treatment modified after MRSA diagnosis. Ultimately, 49.3% (68/138) of the infections were treated with effective antibiotics. Few complications were found in patient records.

Conclusions

In non-endemic settings, the possibility of an infection caused by a drug-resistant pathogen is not well enough recognized, hence treatment is suboptimal or even completely ineffective. More education is needed for the health-care personnel to raise a suspicion of an infection caused by a drug-resistant pathogen, to evaluate the outcome of empiric treatment, to review taken culture results and to adjust treatment if needed.

27: Exploring MRSA prevalence and implications in Qatar's community

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Background: Among Gram-positive, MRSA is a severe threat, causing conditions ranging from superficial skin infections to life-threatening diseases. 30% of the population is colonized with S. aureus, which may become an infection. Initially, MRSA was a hospital issue; however, recently, community-associated MRSA has emerged with the potential to spread quickly in the community.
Objectives: For the first time in Qatar, this study aims to delve into the prevalence and molecular epidemiology of MRSA in the community. Additionally, it will analyze the virulence genes and phenotypic and genotypic determinants of resistance.
Methods: 576 participants were enrolled from individuals attending the 18 Primary Health Care Centers. Sampling involved swabbing nostrils and axillae and culturing on mannitol salt agar. Suspected colonies were confirmed using Vitek. Identified S. aureus underwent antibiotic susceptibility testing to 16 relevant antibiotics. PCR-specific primers were employed for the genetic determination of resistance and the presence of Panton-Valentine leucocidin (PVL).
Results: The percentage of MRSA in the S. aureus-positive samples was 36.6%. Of the 16 antibiotics studied, 9 showed resistance, including oxacillin (100%), methicillin (100%), ciprofloxacin (28%), cotrimoxazole (14%), Gentamycin (14%), tetracycline (28%), erythromycin (28%), and inducible clindamycin (28%). All of them tested negative for PVL and Mec C.
Conclusion: This study fills a crucial gap in Qatar's healthcare data by providing benchmark information on MRSA's prevalence and molecular epidemiology in the community. These findings are instrumental in setting tailored guidelines to prevent outpatient infections by MRSA and supplement the targeted HA-MRSA screening program at Qatar's primary care health provider.

62: Genomic Insights into Multidrug-Resistant Salmonella Strains in Taiwan: Mechanisms of Resistance and Epidemiological Implications

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Background
MDR Salmonella strains, such as S. Agona and S. Goldcoast, pose a growing public health challenge in Taiwan due to their resistance to multiple antibiotics, complicating treatment and increasing infection severity.

Objective
This study investigates the genomic characteristics and antibiotic resistance mechanisms of S. Agona and S. Goldcoast strains in Taiwan to identify genetic resistance markers and understand their evolutionary relationships for improved treatment strategies.

Methods
Salmonella strains isolated from a patient in northern Taiwan underwent whole-genome sequencing to analyze genomic features, including chromosomes and plasmids. Serotyping confirmed strain identities, and antibiotic resistance profiles were assessed to identify prevalent resistance plasmids. Comparative genomic analysis evaluated multidrug resistance prevalence and genetic clustering using available databases.

Results
WGS identified resistance genes on a 278 kb plasmid in one strain, underscoring the genetic basis of resistance. Approximately half of the analyzed S. Agona strains exhibited multidrug resistance, with genetic clustering indicating recent acquisition of resistance genes within distinct clusters. S. Goldcoast strains showed consistent resistance genes across variants, suggesting common evolutionary paths and potential intra-patient gene transfers. Azithromycin resistance was linked to known resistance genes, offering detailed mechanistic insights.

Conclusion
This study highlights the pressing issue of MDR Salmonella strains in Taiwan, emphasizing the need for genomic surveillance to monitor and control antibiotic resistance effectively. Understanding genetic resistance mechanisms is crucial for developing targeted treatment strategies and safeguarding public health against antimicrobial resistance.

64: Investigating the changing taxonomy and antimicrobial resistance of bacteria isolated from door handles in a new infectious disease ward pre- and post-patient admittance.

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Healthcare associated infections (HAIs) are a significant burden to health systems, with antimicrobial resistance (AMR) further compounding the issue. The hospital environment plays a significant role in the development of HAIs, with effective microbial monitoring providing the foundation for targeted interventions.

We sampled door handles at a newly built hospital prior to the first patients being admitted, then six and twelve months after this date. We identified unique colonies and assessed the antibiotic resistance of Staphylococcus spp., with further whole genome sequencing (WGS) of multidrug resistant (MDR) isolates.

Prior to patient admission, 43% of sites harboured Staphylococcus spp., increasing to 55% and 65% at six and twelve months respectively, whilst Bacillus spp. saw a large increase from 3% to 68% and 85% respectively. No ESKAPE pathogens were identified. Susceptibility testing of the Staphylococcus spp. showed relatively low resistance to all antibiotics except cefoxitin (56%) prior to patient admittance. Resistance was highest after six months of ward use, with an increase in isolates susceptible to all antibiotics after 12 months. However, MDR remained high. WGS of MDR isolates revealed blaZ (25/26), mecA (22/26) and aac6-aph2 (20/26) were the most abundant resistance genes. No isolates believed to be clonal were observed across the three time points.

This study highlighted the prevalence of a resistant reservoir of bacteria recoverable on high touch surfaces. However, given the lack of clonality, it would suggest that the cleaning protocols in place are sufficient, and that the observed bacteria are a result of subsequent recolonisation events.

94: Increasing Piperacillin/Tazobactam (TZP) use is associated with increased resistance in Escherichia coli and Klebsiella pneumoniae

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Background
An increasing consumption of TZP in Danish hospitals lead us to investigate if increased consumption was associated with increased resistance to TZP and gentamicin (GEN) in Enterobacterales in our referral hospital.

Method
Susceptibility data was extracted from LIMS and included clinical samples from 2016-2023 containing Enterobacterales. Susceptibility testing was done by EUCAST standardized disk diffusion method and interpreted using EUCAST Clinical Breakpoint Tables v. 9.0. Only one isolate per species per patient within 30 days was included. Patients with Cystic Fibrosis was omitted. Antibiotic consumption was estimated from purchase data from our referral hospital and nationally from medstat.dk.

Results
TZP consumption increased over 30 % in our hospital from 2016-2023 while GEN was stable. When comparing the periods 2016-19 and 2020-23 TZP resistance in E. coli and K. pneumoniae increased by 73.8% and 39.7% with 12.3% and 21.3 % of isolates being resistant, respectively. Although the use of GEN remained stable, resistance in E. coli and K. pneumoniae increased by 39.7% and 72.7% with 7.7 % and 5.7 % of isolates being resistant, respectively. Calculated p-values for all above developments had a high significance with p-values <0,001.

Conclusion
The increased use of TZP was associated with increased TZP resistance in E. coli and K. pneumoniae. Despite a stable consumption of GEN, there was an increase in GEN resistance. We hypothesize that this increase in GEN resistance may be driven by the increased consumption of TZP.

98: Understanding CPE Screening Through Patient and Public Involvement: Insights for Focused Improvements

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Background: Carbapenemase-producing Enterobacterales (CPE) is projected to cause 10 million deaths annually by 2050. This alarming prediction has shaped local policies to focus on antimicrobial stewardship and source isolation. However, the impact on individual patients is often overlooked, and the patient perspective is frequently excluded in anti-microbial resistance (AMR) strategies.

Aim(s)/Objective(s): Our objective was to learn about the patient's knowledge of CPE, the risk of AMR, and experiences with rectal screening and source isolation.

Method(s): Using a PPIE (public and patient involvement and engagement) framework, during a CPE outbreak, we conversed with capacitous adults discussing their lived experiences of CPE screening, need for isolation, and infection awareness. CPE-positive (n=8) and CPE-negative (n=2) participants were approached. The latter had undergone >3 CPE screens, were at high risk of AMR acquisition and in source isolation.

Results: Our one-on-one conversations revealed poor levels of patient knowledge about CPE and AMR risk, with many participants expressing concerns about the limited or lack of information provided by healthcare providers. Experiences with rectal screening were generally reported as uncomfortable, with passive acceptance of it. Opinions on source isolation were mixed, with feelings of being bored or lonely emerging as a common sentiment.

Discussion and/or Conclusion(s): These discussions emphasize the need for better patient education and communication about CPE and antibiotic resistance, especially for frail populations. The study highlights the importance of healthcare staff in delivering clear information. Patient empowerment must be encouraged, and efforts should focus on closing the knowledge gap to improve patient experience.

129: Revolutionizing the Battle Against Antimicrobial Resistance: The Leading Role of the Saudi Food and Drug Authority (SFDA) in Utilizing Advanced Techniques

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The Saudi Food and Drug Authority (SFDA) is actively combating antimicrobial resistance (AMR) through a multifaceted approach. Recognizing AMR as a global health threat, the SFDA implements a National Action Plan (NAP) targeting various sectors and collaborates internationally with organizations like WHO and OIE. It focuses on improving collaboration at the animal-human interface, adhering to international standards through quadripartite collaboration, and contributing to global AMR surveillance systems. The SFDA conducts integrated surveillance of AMR in foodborne bacteria, emphasizing awareness, education, and training, and conducts research to identify knowledge gaps and assess risks associated with foodborne AMR. The SFDA also monitors the prevalence of resistant bacteria and studies the epidemiological link between foodborne pathogens and clinical infections in Saudi Arabia. Furthermore, the SFDA employs advanced techniques such as metagenomics and whole-genome sequencing (WGS) to assess the risks associated with foodborne pathogens by examining their genetic composition, virulence factors, and antibiotic resistance. The SFDA operates a BioBank that encompasses a diverse range of bacterial specimens derived from food, foodborne pathogens, environmental sources, and clinical isolates associated with food poisoning incidents. This extensive repository serves as a valuable resource for studying AMR patterns and understanding the dynamics of AMR transmission within Saudi Arabia. Additionally, the SFDA is engaged in research and development initiatives focused on identifying alternatives to antibiotics for combating AMR, particularly against multidrug-resistant (MDR) and extensively drug-resistant (XDR) strains of Salmonella originating from food sources.

149: Complete genome assemblies and antibiograms of 22 diverse Staphylococcus capitis isolates

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Staphylococcus capitis is an opportunistic pathogen known to cause catheter-associated bacteraemia, prosthetic joint infections, skin and wound infections, among others in vulnerable hosts. Detection of S. capitis in normally sterile body sites saw an increase over the last decade in England, where a multidrug-resistant clone, NRCS-A, was widely identified in blood samples from infants in neonatal intensive care units. To address a lack of complete reference genomes and antibiograms of S. capitis in public databases, we performed Nanopore long-read and Illumina short-read whole-genome sequencing, hybrid de novo genome assembly, and antimicrobial susceptibility testing of 22 diverse isolates.

Here, we present complete genome assemblies of two S. capitis subspecies type strains (capitis: DSM 20326; urealyticus: DSM 6717) and 20 clinical isolates (NRCS-A: 10) from England. Each genome is accompanied by minimum inhibitory concentrations (MICs) of 13 key antimicrobials: vancomycin, teicoplanin, daptomycin, gentamicin, fusidic acid, rifampicin, ciprofloxacin, clindamycin, erythromycin, linezolid, quinupristin-dalfopristin, cefoxitin, and mupirocin. These 22 genomes were 2.4–2.7 Mbp in length and had a GC content of 33%. Twenty isolates carried up to four plasmids. According to the European Committee on Antimicrobial Susceptibility Testing (EUCAST) clinical breakpoints, resistance to teicoplanin, daptomycin, gentamicin, fusidic acid, rifampicin, ciprofloxacin, clindamycin, and erythromycin was seen in 1–10 isolates. All isolates were susceptible to vancomycin, linezolid, and quinupristin-dalfopristin. EUCAST breakpoints were not available for cefoxitin or mupirocin, although MICs ≥256 mg/L were observed. Our data provides a resource for future studies on genomics, molecular epidemiology, antimicrobial resistance, and evolution of S. capitis.

154: Antibiotic resistant bacterial colonisation in 5 neonatal units in the UK as part of the NeoIPC study

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Background
Colonisation by antibiotic-resistant bacteria (ARB) is a risk factor for severe hospital-acquired infection/sepsis, especially for infants born <32 weeks' gestation (high-risk). We investigated colonisation pressure at the neonatal unit-level in preparation for a trial.
Methods
Five English units conducted 4 cross-sectional surveys in a one-month period; at each survey clinical data, skin swabs and stool samples were collected. Samples were analysed by RT-qPCR for the detection of bacterial resistance genes. Stool samples were analysed for carbapenemases, extended-spectrum-beta-lactamases (ESBLs), and vancomycin-resistant-enterococci (VREs) and skin swabs for methicillin-resistant Staphyloccocus aureus (MRSA); ARB colonisation was defined as detection of at least one target gene in an infant's sample.
Results
237 infants participated; 96/237 (40%) were high-risk. 209 (88%) infants had received antibiotics at least once and 48 (20%) had ever had surgery. Between 113 and 127 infants were present per survey; 44 (18%) infants were present in all 4 surveys. Of possible samples, 475/482 (99%) skin swabs and 332/482 (69%) stool samples were collected; 7/475 (1%) skin swabs and 26/332 (8%) stool samples were positive. Only 10/26 (28%) of positive samples were from high-risk infants. ESBL genes were the most commonly detected (24/26 samples) resistance genes, while 0/26 stool samples were positive for VREs and only 2/26 were positive for carbapenemases. Of note, 447/475 (94%) skin swabs were MRCoNS positive.
Conclusion
Resistant bacterial colonisation was generally low across English neonatal units with both low-and-high-risk infants being colonised. Unit-level IPC interventions target both direct and indirect effects of colonisation regardless of risk level.

182: Comparison of cefiderocol antibiotic susceptibility testing methods in New Delhi Metallo-β-lactamase (NDM) producing Enterobacterales isolates from Merseyside hospitals.

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Background
Cefiderocol is a novel treatment option for infections caused by carbapenemase producing gram-negative bacteria. NDM producing Enterobacterales are often extremely drug resistant and cefiderocol can represent the only treatment option. The Enterobacterales' clinical breakpoints for cefiderocol differ greatly between two major advisory bodies - Clinical and Laboratory Standards Institute (CLSI) and European Committee on Antimicrobial Susceptibility Testing (EUCAST) – causing potential categorical disagreement.

Methods
63 NDM producing isolates from four Enterobacteriaceae genera (Citrobacter; Enterobacter; Escherichia; Klebsiella) across seven species were obtained from routine samples in three hospitals in Merseyside. The susceptibility of these isolates to cefiderocol was evaluated using the disk diffusion (DD) (30µg disk, MAST, UK), and MIC (0.016-256mg/L strip, Liofilchem, Italy) methodologies against both organisations' breakpoints.

Results
EUCAST breakpoints deemed 66.7% (n=42) of the isolates were resistant using DD and 11.1% (n=7) were resistant using MIC; CLSI breakpoints found one isolate was resistant to cefiderocol using both DD and MIC, 1.59% (n=1). Excluding Area of Technical Uncertainty (ATU) EUCAST isolates for DD methodology, the category agreement (CA) between MIC and DD for EUCAST was 28.6%, and for CLSI was 96.8%.

Discussion
While CLSI produced greater CA in this study, EUCAST is the main advisory body in the UK. EUCAST's results of a smaller CA but greater determined resistance has potential clinical implications in treatment selections of antimicrobials. All isolates have been whole genome sequenced, and the next stage of the project is to compare the susceptibility profiling with genomic determinants of resistance.

214: A 5-year review of the antimicrobial resistance profiles of extended beta-lactamase producing species (ESBLs) at a tertiary centre in London

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Antimicrobial resistance (AMR) is one of the most important issues in infection medicine, and a key priority for agencies such as the World Health Organisation (with the Global Action Plan 2015) and the UK Health and Security Agency (with the 5-year National Action Plan 2024). A key multi-drug resistant group is extended beta lactamase producing species (ESBLs), which commonly cause urinary tract infections (UTIs) and the resulting bacteraemias.

In this study, we analysed the resistance profiles of all ESBLs isolated from patient urine and blood samples at the Royal Free NHS Trust in London, from 2018-2023. Using 9285 samples, we have shown how resistance of ESBLs to notable antibiotics has evolved over this 5-year period.

Of particular interest is the resistance trend to gentamicin, our first line antibiotic for urosepsis and pyelonephritis. Resistance of ESBLs to gentamicin has increased from 20.1% on 2020 to 31.6% in 2023. Gentamicin is also our first line agent for treatment of catheter-associated UTIs; over the 5-year period, 43.4% of ESBLs isolated from catheter urine samples were resistant to gentamicin, compared to 25.8% of all ESBLs isolated. In addition, our second line antibiotic for urosepsis is temocillin; we have shown 24% of ESBLs isolated from blood cultures are resistant to temocillin, and 40.9% have intermediate resistance.

These results raise pertinent questions regarding our current guidelines for the treatment of urosepsis and catheter-associated UTIs, and will be of further importance in the future, if the prevalence of ESBLs continue to rise.

215: A review of Gram-negative blood culture isolates and antimicrobial susceptibility from neonatal patients treated on an intensive care unit at a tertiary teaching hospital

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Introduction
Sepsis is a significant cause of morbidity and mortality in neonatal patients (aged ≤28 days). NICE guidelines for neonatal infection recommend using local antibiotic susceptibility and resistance data when determining empirical treatment for early and late onset sepsis (sepsis ≤72 and >72 hours following birth, respectively).

Method
A retrospective review of all neonatal patients admitted to an intensive care unit at St Marys Hospital (Manchester Foundation Trust) with a positive blood culture (BC) from September 2022 - March 2024.

Results
The unit had BC positivity rates of 6-12% across the study period. Following deduplication, 202 BC isolates were considered; 26 (13%) were Gram-negative. 21 of these 26 (81%) were Enterobacterales, the remaining 5 (19%) were non-lactose fermenting organisms. 6 (23%) and 20 (77%) isolates were from cases of early- and late onset sepsis, respectively.
BC isolates in cases of late onset sepsis showed higher than expected rates of antimicrobial resistance: 9 (53%) and 7 (31%) were resistant to cefotaxime and gentamicin, the unit's first-line empirical agents. 4 isolates (20%) were resistant to both agents.
Of the 4 early-onset sepsis cases, all isolates were sensitive to cefotaxime with 1 isolate (25%) demonstrating resistance to gentamicin.

Conclusion
Our study demonstrates high rates of resistance to empiric antimicrobials in late-onset sepsis, prompting a review of practice. Our study supports prior recommendations of using local surveillance data to inform empiric antimicrobial management of late onset sepsis. Additionally, BC sampling should be optimised to enhance positivity rates and maximise surveillance data quality.

221: Assessment of the effectiveness of antimicrobial agents against Staphylococcus aureus and risk factors for resistance in the community, a sub-analysis of the AMRIC project

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Introduction
Staphylococcus aureus are part of the skin and nasal microbiota, and can cause skin and soft tissue infections when commensal S. aureus enter via breaches in the skin barrier. Penicillin-based antibiotics are used as first-line treatment for S. aureus infections, however 1 in 20 patients report an allergy to penicillins so alternatives such as clarithromycin are used.

Methods
Nasal/throat swabs were cultured from 2,049 participants recruited through the AntiMicrobial Resistant microbes In the English Community (AMRIC) cross-sectional study. Swabs were cultured on selective agar, organisms identified by MALDI-TOF mass spectrometry and antimicrobial susceptibilities determined by VITEK®2. A multi-variate analysis was performed to investigate risk factors associated with resistance to antimicrobials.

Results
A moderate prevalence of S. aureus (MSSA) carriage (30.6%; 427/1394), and a low prevalence of methicillin-resistant Staphylococcus aureus (MRSA) (1.6%; 22/1394) was identified. Of those participants with MSSA, 18% were resistant to clarithromycin (77/427) and just 1.6% carried doxycycline resistant MSSA (7/427). For participants colonised with MRSA, the resistance to clarithromycin and doxycycline was much higher at 27% (6/22) and 18% (4/22) respectively. Odds ratios will calculated to determine the risk of carrying resistant MSSA or MRSA based on demographics and other risk factors.

Conclusions
Based on these data, 1 in 5 penicillin allergic patients would fail first line therapy for S. aureus infection, extending to 1.2% of the English population. Understanding risk factors associated with S. aureus carriage and antimicrobial resistance rates can guide empiric treatment guidelines.

252: Identifying routes of transmission of ESBL- and carbapenemase-producing Enterobacterales across care settings in Merseyside

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Introduction

ESBL- and carbapenemase-producing Enterobacterales (ESBL-E/CPE) are global priority pathogens and people with advanced care needs, including older adults, are at increased risk of colonisation and infection. Healthcare facility contact or residence in longterm care facilities are risk factors, but routes of ESBL-E/CPE transmission are not well understood as frail patients navigate complex care journeys.

Methods

We recruited participants in hospital care of the elderly wards (n=3), NHS intermediate care facilities (n=1) and care homes (n=2), screening for ESBL-E/CPE colonisation with stool/rectal swab selective culture for third-generation cephalosporin-resistant (3GC-R) organisms. We used plate-sweep metagenomics (the MSWEEP/MGEMS pipeline) to fully describe within-participant strain diversity and conducted systematic sampling of the environment to define environmental contamination. Transmission modelling incorporating genomic data will identify likely transmission routes.

Results

We collected 603 samples from 144 participants, median (IQR) age 82 (74-88). 3GC-R E. coli or K. pneumoniae were recovered from 38/144 (26%) participants and 189/3816 (5%) environmental samples, most often sinks/toilets. Preliminary sequencing has identified frequent participant colonisation with multiple sequence types and episodes of sharing of sequence types between patients and the environment.

Conclusion

Carriage of multiple strains of 3GC-R bacteria is common and hence genomic transmission modelling involving a single-colony pick strategy will underestimate transmission events; plate-sweep metagenomics provides a method to define within-niche diversity at scale. Elderly adults are frequently colonised with 3GC-R bacteria across the care spectrum, and IPC interventions tailored to care setting environments as well as acute hospitals have a role to play in interrupting transmission.

259: Tracking antimicrobial resistance across care settings in Liverpool – poor communication and a fragmented system undermine infection control.

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Introduction

Antimicrobial resistance is identified by the World Health Organisation as a global threat. Those at increased risk from drug resistant infections include elderly hospital inpatients and care home residents. In the UK an increasing number of people with complex care needs require hospital and/or residential care.

A longitudinal cohort study was carried out to identify the presence and potential transmission pathways for ESBL- and carbapenemase-producing Enterobacterales across different care settings in Liverpool. A nested qualitative study explored health system factors affecting infection prevention and control.

Methods

16 semi-structured interviews were conducted with purposively sampled staff and managers from 3 NHS trusts and 2 private care providers. Additional participants were identified using a snowball approach. Thematic analysis of transcripts was undertaken using NVivo12.

Results

Communication gaps between different community, hospital and residential care services emerged as a significant barrier to infection control. This is exacerbated by a lack of a universally accessible patient health information system and the increasing fragmentation of care provision between public and private providers. As a result, infection risk information, including antimicrobial resistance, was often perceived to be inadequate.

Conclusion

People-centred health systems for the prevention of antimicrobial resistance require timely and accurate exchange of information and improved awareness of infection risks in frail and vulnerable patients. Identifying gaps in communication can help to inform vital mitigation measures.

Antimicrobial stewardship

37: Review of Antibiotic Stewardship in Barnsley Hospital

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Introduction
Antimicrobial stewardship refers to promoting sensible and accurate use of antibiotics to address antimicrobial resistance (1).
From April to June 2024, patients on IV antibiotics were audited for their policy compliance.

Methods
Data was collected on 90 adult patients, across 9 wards, currently on IV antibiotics. The data points included whether their choice of antibiotic complied with local guidelines, whether the antibiotics were reviewed at 72h and the outcome of that review.

Results
Across the 9 wards, on average 82.67% of patients on IV antibiotics were on the correct antibiotic according to local guidelines.
95% of patients underwent a review of their IV antibiotics at 72h. The outcomes were:
Stop the antibiotics- 6%
Continue the same IV antibiotic- 45.6%
Switch to oral antibiotics- 25.6%
Refer for OPAT- 1%
Escalate the antibiotic- 14.6%
De- escalate the antibiotic- 5.9%

Conclusion
An antimicrobial stewardship toolkit released by GOV UK stated that guideline adherent empirical therapy is associated with a relative risk reduction in mortality of 35%. The 'review and revise' approach to prescribing antibiotics showed a reduction in the relative risk of death by 56%. Broad spectrum antimicrobials are not linked to improved clinical outcomes compared with narrow spectrum antimicrobials but are associated with higher rates of adverse effects. (2)
This audit is a pilot programme with plans to expand to a hospital wide, quarterly audit. Regular auditing and feedback together with more wide educational sessions should improve compliance with guidelines.

61: Effects of antimicrobial stewardship measures on carbapenem prescribing at a district general hospital (DGH).

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Background
Increasing antimicrobial resistance (AMR) is a global threat. Prudent prescribing is considered an effective measure in reducing antimicrobial overuse and dissemination of resistance. The Countess of Chester Hospital (CoCH) was identified as a high carbapenem prescribing organisation during COVID.

Aims
This was a retrospective study which aimed to:
•Determine how the broad-spectrum antibiotic usage has changed between 2019-2024 at CoCH, including the effect of the pandemic and carbapenem-sparing antimicrobial stewardship (AMS) actions.
•Compare the broad-spectrum prescribing rates at CoCH and other UK DGHs
•Determine the effect of the multi-faceted antimicrobial stewardship measures and Trust policy changes on the rates of carbapenem prescribing.

Methods
Local and national carbapenem usage data and general antibiotic usage was collected from the Fingertips database.
The timeline of the specific carbapenem-sparing stewardship actions was determined based on AMS minutes. Antibiotic prescribing data were analysed in line with the implementation of these stewardship actions.

Results
While the carbapenem prescribing rates were higher at CoCH than the national average, interestingly, the total antibiotic prescribing rates were low, even below the national average.

Implementation of a diverse range of stewardship measures was proven effective and successfully reduced the carbapenem usage locally.

However, the local carbapenem prescribing rates are still above the national and regional average and further interventions, close monitoring and audits are warranted.

Conclusion
Despite increased carbapenem usage, resistance rates of Gram-negative isolates remained stable during this period. Careful monitoring of antimicrobial resistance is required in the future to detect any effects of the increased carbapenem usage.

68: Determining antibiotic usage targets for controlling Clostridioides difficile infections incidence in hospitals- a threshold logistic modelling approach

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Objective: Clostridioides difficile infection (CDI) is a major hospital-acquired infection that results in increased morbidity and substantial costs. Antimicrobial stewardship (AMS) is designed to optimise antibiotic prescribing in healthcare environments. However, maintaining access to effective antibiotics while preventing antibiotic resistance is challenging. Studies identified a threshold level of antibiotic use, beyond which resistance is likely to be triggered. We aimed to assess the utility of a threshold logistic approach to identifying thresholds for certain antibiotic use associated with CDI in an English teaching hospital.

Methods: We employed a threshold logistic analysis on data from Pinderfields Hospital (Mid Yorkshire Teaching NHS Trust) to identify thresholds and risk scores in hospital-level antibiotic use associated with hospital-onset, healthcare-associated (HOHA) CDI.

Results: The analysis of data identified an incidence greater than 0.2645 cases/1000 occupied bed-days (OBD) as the cutoff rate to define a critical (high) incidence rate of HOHA CDI. Fluoroquinolones and piperacillin-tazobactam were found to have thresholds at 84.8 and 54 defined daily doses (DDD)/1000 OBD, respectively. Using the threshold logistic models, we were able to calculate risk scores for HOHA CDI incidence rate entering the critical level, and to perform ‘what-if scenarios’ on future values of fluoroquinolones and piperacillin-tazobactam use to assess the expected impact on the predicted incidence rate of HOHA CDI for future months.

Conclusion: Threshold logistic models can be used to define critical pathogen incidence rates, determine quantitative targets for antibiotic usage, and inform the effective design and implementation of antimicrobial stewardship programs to control hospital resistance.

71: Compliance with Updated Sepsis Guidelines in Lancashire Teaching Hospitals NHS Trust: The Impact on Gentamicin Usage and Incidence of AKI

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Objectives
Outcomes in sepsis can be improved through rapid diagnosis, source identification and timely administration of antimicrobials. Local guidelines for managing severe sepsis (NEWS2 ≥ 7) were updated to a combination of Amoxicillin, Metronidazole and Gentamicin (AMG). We aim to assess compliance with guidelines and analyse the impact of these changes on Gentamicin use and Acute Kidney Injury (AKI) incidence.
Method
We compared two cohorts: from 1st January to 31st March 2023, and from 1st January to 31st March 2024. 200 patients were randomly selected from each cohort to compare Gentamicin usage and AKI flags before and after the policy change.
Results
From the 2024 cohort, only 7.3% of patients treated with AMG were treated per guidelines. Subset analysis revealed that despite a 24% increase in the Daily Drug Doses of Gentamicin, AKI flags decreased by 1.7% after the implementation of the updated guidelines.
Discussion
There is evidence of overtreatment of sepsis with triple therapy. Addressing the inappropriate, empirical use of AMG within secondary care settings is crucial. The observed decrease in AKI post-policy change can be attributed to multiple factors, including more vigilant Gentamicin monitoring and reduced sepsis-induced AKIs through more effective sepsis management.
Conclusion
This audit provided useful insight into the management of sepsis unknown source. Areas of poor compliance can be targeted, and interventions implemented before a re-audit cycle. Further study using standardized samples is necessary to conclusively determine the efficacy of the updated guidelines and their impact on the incidence of AKI in sepsis patients.

75: Evaluating the impact of Antimicrobial pharmacist and Microbiology trainee led Antimicrobial stewardship ward rounds at a tertiary care teaching hospital

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Background:
Increasing antimicrobial resistance is a global threat. There is a need for more effective Antimicrobial stewardship practice globally. Pharmacists are esteemed members of Antimicrobial stewardship (AMS) teams and working with them on AMS ward rounds provides an excellent opportunity for trainees to develop their leadership skills.

Aim:
The aim was to review the data from 4 months of joint Pharmacist / Microbiology registrar AMS ward rounds, looking particularly at the uptake of advice given.

Method:
AMS ward rounds were carried out by an antimicrobial pharmacist and a microbiology registrar weekly between February and May in 2024. The focus of the rounds was to identify and review patients that had been started on broad spectrum antibiotics by the Medical Teams. These patients were identified by the Trust electronic prescribing system. Data on any recommended changes to their antibiotics and wider infection management was collected prospectively.

Results:
In total 12 AMS wards rounds took place. Each round took approximately 3 hours (including patient identification and review post-round).
87 patients were reviewed (67 on Piperacillin/tazobactam; 20 on alternative antibiotics):

Recommendation	% patients	% recommendation actioned
De-escalation	63% (55 pts)	91%
Stop date	26.5% (23 pts)	78%
Continue and review	7% (6 pts)	100%
Escalation	3.5% (3 pts)	67%

As part of the de-escalation an IV to Oral switch was advised in 42% of patients (23/55 with 91% actioned).

Conclusion:
Collaborative and targeted AMS ward rounds support rationalising and targeted antibiotic prescribing and in our experience at least the advice is generally followed.

80: A review of antifungal prophylaxis prescribing practice in paediatric oncology patients in a tertiary healthcare centre in the United Kingdom

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Introduction: Antifungal prophylaxis is used during paediatric oncology treatment and has been shown to reduce the risk of infection and mortality. We conducted a prospective study on antifungal prophylaxis at Cambridge University Hospitals NHS Foundation Trust, a regional centre for paediatric stem cell transplantation.
Methods: Inpatient antifungal prophylaxis prescriptions were identified using our electronic systems EPIC® and QlikView® over six weeks (01/01/2024-11.02.2024). Patient records and prescribing practices were assessed against local and national guidelines (UK Fungal Disease in Haematopoietic Stem Cell Transplant (SCT) Working Group 2017).
Results: 41 patients were assessed: median age was 6 years old (range 1 -18 years); 49% were female. A total of 94 antifungal prescriptions were reviewed: 62 Pneumocystis jirovecii (PJP) antifungals; 32 other non-PJP antifungals. Of these, 68% of PJP and 97% of non-PJP antifungals were indicated. Only 11% of non-PJP antifungal prescriptions followed the SCT guidelines, with 86% for other indications. PJP prescribing was 90% compliant. Therapeutic drug monitoring (TDM) was performed appropriately in 83% of cases, however only 33% had pharmacist input when sub-therapeutic. Only 30% of doses not given on time were explained.
Conclusions: Some aspects of antifungal prophylaxis management have scope for improvement. Itraconazole was not prescribed for any patient following a SCT, despite being first-line in the guidelines. PJP prescriptions were generally appropriate, however, non-compliance around interactions with methotrexate were noted. Further investigation into factors leading to missed/delayed doses and dose-adjustment related to TDM is required. To address some of these issues we have introduced an e-prescribing monitoring system.

85: Acute Frailty Syndrome: A New Approach to an Old Age Problem Resulting in Reduced C.difficile Cases at South Warwickshire University NHS Foundation Trust (SWFT)

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Clostridioides difficile rates in the post-COVID era have increased nationwide. Through post infection reviews, the AMS and IPC teams observed that older adults living with frailty were the predominant patient cohort affected.

The AMS and frailty teams collaborated to investigate further through joint ward rounds and audit. They noted frequent inconclusive diagnoses documented in clinical records and treatment plans including: 'acute confusion ?cause', 'off legs', 'falls', 'infection ?chest/urine.' This was associated with overuse of broad spectrum antibiotics, particularly co-amoxiclav, to cover possible underlying infection.

The need for bespoke prescribing guidance was highlighted due to the ambiguous way this group of patients may present to hospital. The solution introduced was a new set of antimicrobial guidelines intended specifically for older adults living with frailty (clinical frailty score ≥4). 'Acute frailty syndrome,' presenting as falls, delirium or new incontinence, is often triggered by minor illnesses such as UTI or LRTI. This was introduced as a new indication within these guidelines offering lower risk alternatives of amoxicillin, fosfomycin +/- gentamicin, instead of the 'covering all bases' approach with co-amoxiclav as had been observed. The use of 2-3 narrower spectrum antibiotics provides adequate cover for potential sources of infection while keeping the risk of C.difficile low.

The new guidelines were well received and following implementation, along with regular stewardship ward rounds and education sessions, rates of C.difficile infections at SWFT in this patient group fell dramatically. This was in contrast to other Trusts in the region who continued to see high numbers of infection.

87: Exploring Pharmacist Antimicrobial Stewardship Electronic Interventions at a Large Teaching Hospital in the East of England: A Descriptive Study

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Antimicrobial Stewardship (AMS) is a global health priority focused on optimizing antimicrobial use. Clinical pharmacists play a key role in advancing AMS. At Cambridge University Hospitals (CUH), the Epic system enables pharmacists to document AMS interventions as "I-vents," which is mandatory for comprehensive oversight. This study examines the use of I-vents for AMS interventions over several years, exploring intervention distribution, types, differences across pharmacist bandings, and temporal changes, especially pre- and post-COVID-19. Findings will inform future AMS strategies, service needs, and training programs.

Objectives:

1. Explore types of antimicrobial interventions by pharmacists.
2. Examine differences among pharmacists of different bandings.
3. Investigate changes over time and the impact of COVID-19 on interventions.

Methods: Data were collected from the Epic system at CUH, including interventions from April 2018, 2019, 2021, and 2022. The dataset included intervention IDs, pharmacist names, documentation details, wards, antimicrobial names, and outcomes (accepted/rejected). Ethical approval was not required as it was a service evaluation project. Interventions were categorised manually by type.

Preliminary Data:

- In 2018, there were 506 I-vents: band 8 pharmacists accounted for 331 interventions, while bands 6 and 7 generated 243 and 246 interventions, respectively.
- In 2019, there were 531 I-vents: band 8 pharmacists increased to 605 interventions, while bands 7 and 6 had 187 and 103 interventions, respectively.
- Most interventions occurred in clinical areas like Transplant, Neonatal, Critical Care, Haematology, and Oncology.

References:

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88: Responsible use of antibiotics by nurses in acute care and contributions to antimicrobial stewardship: a mixed-methods study protocol

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INTRODUCTION:
The alarming antimicrobial resistance increase worldwide prompted the implementation of antimicrobial stewardship programmes (AMS). Although the majority of these programmes focus on prescribing, the contribution of all stakeholders in AMS is increasingly valued and integrated into healthcare. Manning et al. proposed framework to guide AMS nursing practice, includes safe antibiotic administration process, an accountable nursing intervention in antibiotics management and a step forward into AMS multidisciplinary team.
OBJECTIVE:
This study aims to evaluate the effectiveness of a multimodal intervention to improve nurses' knowledge and safety in the preparation and administration of intravenous antibiotics.
METHODS:
A four-phase mixed-methods study will be conducted: 1st) Development of data collection instruments: observation guide for the preparation and administration of intravenous antibiotics and a self-report questionnaire (nurses' knowledge about AMS and socio-cognitive determinants of nurses' behaviour); 2nd) Descriptive observational study aiming to evaluate nurses' knowledge and practice in intravenous antibiotics preparation and administration, and the socio-cognitive determinants underlying the observed practices based on Ajzen's Theory of Planned Behaviour; 3rd) in light of the findings from Phase 2, we intend to engage in the co-creation and implementation of a multimodal intervention targeted at the nursing team; 4th) The objective of this quasi-experimental study is to evaluate the impact of the multimodal intervention that was carried out in Phase 3.
RESULTS:
Not applicable.
CONCLUSION:
The responsibility for reducing antimicrobial resistance lies with all stakeholders. We hope that this study will inform the design of multimodal interventions that promote the active participation of nurses in AMS.

90: The use of BioFire technology in the diagnosis of bacterial meningitis, with a focus on pneumococcal meningitis, and its impact on appropriate antibiotic and steroid use

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Introduction and Objectives:
BioFire Film Array multiplex PCR has been validated for use in the diagnosis of CSF infection. There is evidence that the use of steroids in Streptococcus pneumoniae and Haemophilus influenzae meningitis improves outcomes. The audit aim was to assess compliance with Trust guidelines with respect to steroid prescription in appropriate time frames. Impact of BioFire on timely compliance and on antiviral and antimicrobial rationalisation was also assessed.
Methods:
A retrospective review of all patients from whom H. influenzae or S. pneumoniae had been detected between 2016 and 2023 was carried out. Twenty-two patients were identified. Documentation was reviewed to identify when steroids, antivirals and antimicrobials were administered.
Results:
In the pre-BioFire cohort (n=8), two patients received steroids (25%). In the BioFire cohort (n=14), five patients received steroids (36%). The majority of patients received empirical aciclovir. The pre-BioFire cohort received 5-6 doses and the BioFire cohort received an average of two doses prior to result availability and antimicrobial rationalisation. In the pre-BioFire group two patients required antibiotic rationalisation (at 40 and 120 hours). In the Biofire group four patients required rationalisation (ranging from 12 to 24 hours).
Conclusions:
Results demonstrated inadequate empirical prescribing of dexamethasone, suggesting clarity of guidelines could be improved. Increased compliance in the BioFire group is partly owed to the rapid return of CSF results, enabling early provision of microbiologist advice.
Timely rationalisation of antivirals and antimicrobials improved in the BioFire cohort suggesting rapid turnaround of CSF sampling improved antimicrobial stewardship.

108: Benchmarking antimicrobial stewardship activity – using patient outcome measures for invasive bacterial infections across a multi-centre NHS Trust

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Background:
Assessing the impact of antimicrobial stewardship (AMS) is commonly through process measures (e.g. document of indication and duration) and non-patient related outcomes (e.g. antimicrobial usage). Patient-related outcome measures such as 30-day all-cause mortality may provide insights on AMS activities and any unintended consequence of reduced antimicrobial usage.

Methodology:
Crude 30-day mortality data for all bacteraemias was collected across two NHS hospitals (London, UK) between April-2022 – March-2024. Outcomes was classified by patient age, sex and by resistance mechanism.

Results:
A total of 694 episodes of E. coli bacteraemia, 188 S. aureus, 381 non-E. coli Enterobacterales and 179 Enterococci spp. infections were included. The 30-day all-cause mortality with E. coli was 9.4% at this organisation (national average of 15.9% [UKHSA 2024]). Morality rates were higher in males and older (>85years) patients. Co-amoxiclav resistance resulted in higher 30-day mortality for older patients compared to a susceptible control group (25% vs. 11%;p=0.0317).
The highest burden of mortality was seen with Enterococci bacteraemia cases (55/179;30.7%). Rates of 30-day all-cause mortality for S. aureus (29/188;15.4%) and Pseudomonas spp. (10/70;16.8%) were lower than national average; age but not sex predicted increased mortality.
Broad spectrum antimicrobial usage including piperacillin/tazobactam (55.4 vs national median of 125DDD/1,000 admissions) and carbapenems (48 vs 72DDD/1,000 admissions) was in the lowest quartile of national peer NHS Trusts (June2023-May2024). Rates of Trust-attributed C. difficile infection remain in the lowest national quartile.

Conclusion:
Whilst rates of broad-spectrum antimicrobial prescribing are low, there is no unintended harm observed based on benchmarked bacteraemia data.

120: Counting the pennies - calculating the cost of ancillaries in IV antibiotic administration

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Timely appropriate intravenous (IV) to oral antibiotic switch (TAIVOS) offers clinical and organisational benefits. National quality improvement (QI) work has demonstrated that there is a sizeable missed opportunity with TAIVOS, with approximately 18% of patients meeting switch criteria but remaining on IV. At Dudley Group Hospitals (DGH) and University Hospitals Birmingham (UHB), this proportion was 20% and 30% respectively. Ancillaries are a hidden extra cost of IV treatment. The purpose of this study was to determine the potential savings in ancillary costs if TAIVOS was fully implemented.
Methodology:
A list of ancillaries used for IV administration was compiled for IV bolus and infusion administrations and costs were calculated at £3.495 per dose. The formula for estimating the number of IV antibiotic doses administered per day by inpatient bed base was applied for our organisations, along with data from national QI work, to quantify the costs associated with ancillaries.
Results:
We estimated that at DGH and UHB there were 650 and 3000 IV antibiotic administrations per day, equating to £2,271.75 and £10,485 in ancillary costs per day, respectively. Given that 20% and 30% of patients on IV were suitable for oral switch, this equates to potential savings of £166,000 and £1,148,000 annually.
Conclusion:
Ancillary costs should be a feature of campaigns to promote TAIVOS and would add further economic weight to the clinical benefits. The carbon footprint of ancillaries accounts for 80% of the carbon cost of IV antibiotics, adding a further strand to the benefits of TAIVOS.

123: Is Gram-positive cover required in the treatment of spontaneous bacterial peritonitis?

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Background: Spontaneous bacterial peritonitis (SBP) is a common but potentially deadly complication of cirrhosis. British guidelines recommend treating SBP with antimicrobials active against Escherichia coli, streptococci and enterococci. We intend to replace piperacillin/tazobactam (TZP) with temocillin (TEM) for the treatment of SBP due to growing concerns for TZP resistance (despite losing Gram-positive activity) and have audited the microbiology results of ascitic fluid cultures to support this approach.

Methods: Culture-positive ascitic fluids taken specifically for the diagnosis of SBP were retrospectively retrieved from the laboratory information management system over 3.5 years. Patient demographics and clinical details were retrieved from the electronic patient management system. Statistics were generated using chi-square.

Results: 76% (n=70) of 92 culture-positive ascitic fluid samples submitted were deemed contaminants. Of the significant pathogens, 68% (n=15) were Gram-negative and 32% (n=7) were Gram-positive. E. coli represented 67% (n=10) of Gram-negatives and 71% (n=5) of Gram-positives were Enterococcus faecium. Pooled susceptibility to TZP was 55% (n=12) and to TEM was 59% (n=13), (p=0.7). The addition of a glycopeptide (GP) increased this to 77% (n=17) and 91% (n=20) respectively. Whilst the additional spectrum of TZP + GP was not significant (p=0.1), it was for TEM + GP (p=0.03).

Conclusion: There is no significant difference in the spectrum of activity when treating SBP between TZP or TEM. E. faecium is a common pathogen, accounting for 22% of all cases which neither TZP or TEM adequately treat. The addition of a glycopeptide significantly increases the spectrum of TEM and should be considered.

130: Implementation of syndrome-level empiric antibiotic recommendations using the ZARIApp in two hospitals in Lusaka, Zambia (The ZARIA study)

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[1]University Teaching Hospital, [2]Kanyama General Hospital, [3]Levy Mwanawasa University Teaching Hospital, [4]Brighton Lusaka Health Link, [5]London School of Hygiene and Tropical Medicine, [6]Guy's and St Thomas' NHS Foundation Trust

Background: We developed locally-relevant syndromic empiric prescribing recommendations using a novel interactive web app (ZARIApp) for two hospitals in Lusaka, Zambia2,3. In this study, we assessed the impact of the guidelines on antibiotic prescribing.

Methods: We undertook a standardised and validated antimicrobial prescribing survey to assess baseline prescribing before guideline introduction. We repeated the same survey at four and eight months after guideline introduction. All consecutive prescriptions were assessed until we reached the pre-determined sample size. We assessed guideline adherence and determined the change in prescribing based on the WHO AWaRe classification of antibiotics. Chi-squared tests were used to calculate the significance level of any difference.

Results: In May 2022 we collected data on 401 prescribed antibiotics, prior to guideline introduction in October 2022. In February and June 2023 we collected data on 425 and 409 antibiotics respectively. For Hospital 1, the proportion of prescriptions that were compatible with guideline compliance increased from 20.1% in the pre-implementation survey to 40.5% and 44.9% in the first and second post-implementation surveys ($p<0.001$). For Hospital 2, the corresponding increase was from 5.9% at baseline to 23.7% and 24.4% in the subsequent surveys ($p<0.001$). For the two hospitals combined, 45.4% of prescribed antibiotics in the pre-implementation surveys were ‘Access’ antibiotics, whilst for the subsequent surveys this proportion was 43.3% and 41.4% ($p=0.387$).

Conclusion: Guideline introduction resulted in a sustained increase in prescribing compliance. There was no significant impact on the AWaRe classification of antibiotics used, which may reflect a limited range of antibiotics available.

136: Penicillin Allergy Point Prevalence Audit in a UK University Hospital: Results and Lessons Learned

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Background:
Many hospital inpatients report penicillin allergy, but the label can be inaccurate. De-labelling patients with penicillin allergies has proven to be cost-effective. Instruments for risk stratification of patients with penicillin allergies have been validated but not tested on large unselected patient groups in the UK.

Objectives:
1. To understand the proportion of adult inpatients patients identifying as ”penicillin allergic”.
2. To risk stratify inpatent with penicillin allergies.
3. To estimate the cost-effectiveness of penicillin allergies de-labelling.

Methods:
A point prevalence survey of adult inpatients at University Hospitals of North Midlands (UHNM) was carried out over 2 days. Data on penicillin allergies was collected and stratified using two separate validated tools: PEN-FAST and Scottish Antimicrobial Prescribing Group (SAPG) tool . Volunteers (students and staff members) were trained prior to the survey to ensure consistency in data collection.

Results:
A total of 1136 patients were eligible for analysis. 595 (52.4%) patients were male and a 70.3% were admitted to medical wards. 185 (16.3%) patients reported having a penicillin and of this group, 149 (80.5%) were interviewed. 54.3% were classified as “very low” or “low” risk and 38.2% as “moderate” risk of reaction with penicillin. Economic analysis will be carried out to calculate cost effectiveness of establishing a de-labelling service locally.

Conclusion:
Using validated tools, adult inpatients were stratified for a penicillin allergy, and many were identified to have a low risk of reaction, suggesting potential for de-labelling. This data will inform the need of establishing a cost-effective pathway for such service.

137: Review of fluoroquinolone use at Lancashire Teaching Hospitals

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Introduction:
Quinolones are broad-spectrum, synthetic antibiotics with activity against Gram-positive and Gram-negative bacteria, are and used to treat infections of the respiratory tract, gastrointestinal tract, urinary tract etc.
However, in 2023, the MHRA issued an alert regarding the risk of severe side-effects following its use which involves musculoskeletal, nervous, and sensory systems. Due to potentially irreversible side effects these antibiotics must only be used in situations where other antibiotics are inappropriate such as resistance to first-line antibiotics, contraindications, penicillin allergy, or treatment failure.

Results:
The use of fluoroquinolones was audited at Lancashire Teaching Hospitals, during the period Aug 2023-Jan 2024. There have been 759 prescriptions at Royal Preston Hospital (RPH), and 221 prescriptions at Chorley District Hospital (CDH) of fluroquinolones. The top indications were community acquired pneumonia (162 RPH, 40 CDH) and hospital acquired pneumonia (115 RPH, 18 CDH).
In a subset of patients (50), we further investigated whether patients experienced any severe side-effects, if treatment was in line with guidelines, and the allergy status of these patients. 36 patients received treatment in line with guidance, and 42% of these patients had a documented penicillin allergy. In the remainder 14 patients, fluoroquinolone use was deemed inappropriate, and 29% of these patients did not have a penicillin allergy. There were no documented adverse side-effects in any patient.

Conclusion:
It remains important to investigate a patient’s penicillin-allergy status and whether a patient has received a cephalosporin in the past without adverse-reaction, as fluroquinolones may not always be a safe and appropriate alternative.

139: EUCAST revised breakpoints: The Implications To Treating Pseudomonas Infections

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Introduction-EUCAST recently updated the clinical breakpoints for microbial agents to advise on patient therapy. As a result, for P. aeruginosa, antimicrobials such as the beta-lactams and quinolones - previously reported as 'S' (susceptible) – were subsequently interpreted as 'I' (susceptible, increased exposure), meaning there is a likelihood of successful treatment if dosing regimen is adjusted to increase exposure to antimicrobial agent to target organism.

In May 2022, the microbiology department at University Hospital of North Durham (UHND) implemented these changes. Given that most reported sensitivities would be reported as 'I', it raised some antimicrobial stewardship concerns if there was a reluctance to use 'I' categorised antimicrobials. The primary aim was to compare any changes in reporting and prescribing as a result of implementing EUCASTs updates.

Methods-In this retrospective study, we investigated blood culture, urine and sputum samples from inpatient Pseudomonas infections at (UHND). This study audited antimicrobial therapies prescribed by requesting clinicians; the sensitivity results on the laboratory reports; and any consultant microbiologist advisory comments on the reports, before and after implementation of EUCAST guidelines.

Results/Discussion-The number of anti-Pseudomonal antibiotics decreased after the EUCAST changes. Worryingly, the use of antibiotics that did not cover Pseudomonas increased. This was attributed to the incorrect use of urinary tract-antibiotics and a decrease in the use of in the use of pseudomonas covering, tazocin. The use of meropenem did not change due to protection from conserved stewardship measures.

Conclusion-Education may be needed to stop the inappropriate use of antimicrobials that do not cover Pseudomonas.

152: Survey of UK Healthcare Professionals' Knowledge, Attitudes and Behaviour on regarding AMR and the prescription of antibiotics, 2024 vs 2018

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Introduction: To support commitments included in the 2024-29 National Action Plan for antimicrobial resistance (AMR), a national survey assessing knowledge, attitudes and behaviours of healthcare professionals (HCPs) regarding AMR and antibiotic prescribing was conducted.

Methods: An online survey using the COM-B framework, developed by Ashiru-Oredope et al., was deployed in collaboration with Basis Market Research between 1st and 18th March 2024. Individuals surveyed included patient facing HCPs in community, primary and secondary care and workers in long-term care facilities (doctors, nurses and pharmacists, dentists).

Results: 2996 HCPs completed the survey; nursing professionals (nurses, nursing assistants and midwives (31%, 932/2996)) had the highest response rates, followed by medical doctors (28%, 831/2996) and pharmacists (25%, 762/2996). Nearly all HCPs correctly answered that antibiotics are ineffective against viruses (99%, 2951/2996), and colds/flu (98%, 2945/2996)). Approximately a quarter of HCPs (24%, 723/2996) were unaware that antibiotic resistant bacteria can spread from person to person. 62% (1876/2996) of HCPs answered all seven knowledge questions correctly (medical doctors ((75%, 626/831), pharmacists (72%, 549/762), dentists (58%, 60/104), allied health professionals (56%, 53/94), nurses (52%, 485/932), pharmacy technicians (36%, 93/258)). Almost all HCPs have a good understanding of AMR (96%, 2880/2996) with 84% (2517/2996) reporting they had a key role in helping to control AMR.

Conclusions: HCPs' overall knowledge of AMR increased by 3% from 2018 to 2024. Knowledge levels varied between HCP groups, demonstrating the need for more targeted training, as well as a focus on highlighting the important role HCPs play in tackling AMR.

156: Enhancing Infectious Diseases Care in the Intensive Care Unit: A Quality Improvement Project

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Process mapping prior to the quality improvement project(QIP) of starting online infectious diseases (ID) and intensive care unit(ICU) multidisciplinary meetings showed that there was only ad hoc infection doctor input in to the ICU once or twice a week and numerous phone calls. These phone calls were often delegated to the most junior doctors and they often couldnt answer the questions we asked to actually help the patient. As atleast fifty percent of the patients on ICU are on antibiotics this invloved a lot of phone calls. Online multidisciplinary meeting comprising consultants, junior doctors, nurse practioners and pharmacists from both ID and ICU teams were scheduled at fixed times on specific days. The ICU team was responsible for case preparation. A feedback survey from the ICU team was conducted at the end of one year.The feedback survey had 12 respondents showing improved understanding of the rationale behind antibiotic selection. Improved prescribing practices. preventing unnecessary escalation of therapy. Scheduled meetings at fixed times on specific days ensured regularity and participation. Barriers faced were related to computer technical support and non attendance. Conclusion For the junior doctors these meetings gave a foundation of infection management knowledge to take into the rest of their careers. As future application this QIP could be used to collect data on antibiotic usage plus application of antibiotic stewardship. Intravenous to oral switch in patients. All patients being discharged having an antibiotic plan. Better use of diagnostics. Reduction in number of phone calls to microbiology.

159: Antibacterial exposure and the risk of hospital-acquired Clostridioides difficile infection – a multi-centre NHS retrospective cohort study

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Background: Clostridioides difficile infection (CDI) rates have risen in England despite reductions in broad-spectrum antibacterials usage across the country. This study aimed to determine whether previously established associations between antibacterial exposure and CDI persist in a low-incidence hospital setting with low ribotype 027 exposure.

Methodology: A retrospective cohort study included patients aged over 16 admitted for >48hour admission to a multi-centre NHS Trust (April-2022 – April-2023) (London, UK). Antibacterial exposure was assessed as both a binary variable and as days of therapy (DOT). The primary outcome was hospital-acquired CDI (HA-CDI), defined as active CDI with a positive stool sample dated from 2 days after admission to 30 days after discharge. The secondary outcome was severe CDI. Multivariable logistic regression models evaluated associations between antibiotic exposure and HA-CDI, adjusting for age, PPI use, and length of hospital stay.

Results:
This study included a total of 21,508 individual patients from which 54 cases of confirmed HA-CDI were identified. Using binary exposure models, antibacterial exposure was the strongest risk factor for HA-CDI (OR 7.456; 95%CI:2.397-36.250) correcting for age, PPI use and length of stay. Using accumulative exposure model regression, exposure to ceftazidime (OR 1.138 per DOT; 95%CI;1.084-1.188) and piperacillin/tazobactam (OR 1.054 per DOT; 95%CI:1.012-1.088) predicted HA-CDI. Fluoroquinolones, early generation cephalosporins and co-amoxiclav was not associated with increased risk HA-CDI in this model.

Conclusion: In this low-incidence CDI setting with diverse ribotype CDI exposure, accumulative exposure to ceftazidime and piperacillin/tazobactam was associated with HA-CDI. Previous association with fluoroquinolones and co-amoxiclav were not seen.

163: Taking vancomycin to the next level: a review of the administration, monitoring, and levels.

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Background:
Vancomycin is a commonly used antimicrobial agent with activity against aerobic and anaerobic Gram-positive bacteria including methicillin resistant Staphylococcus aureus (MRSA). Vancomycin exposure at high levels has been associated with renal impairment consequently regular therapeutic drug monitoring is advocated.
To achieve prompt therapeutic levels the antibiotic guidelines at University Hospitals Birmingham (UHB) advise a weight-based loading dose followed by 12-hourly regular administration with a renal function-based dose. UHB guidelines suggest that initial vancomycin levels are taken 24 hours after the first dose was administered or immediately before the third dose is given.
The purpose of this study is to review in-patients at UHB prescribed 12 hourly vancomycin, to document if levels were taken in a timely manner (20-25 hours post initial dose and before third dose), the levels that were reported and the actions taken by the clinical team once the levels were reported.
Discussion:
Thirty-three patients were identified across three UHB sites that received parenteral vancomycin between 1st May and 3rd June 2024. Two patients' vancomycin level requests did not have the time of sampling and were therefore excluded from the analysis. Mean time for first vancomycin level was 21.5 hours (IQR= 14 hours). Samples were taken more than 25 hours after the initial dose in 58% (n=18/31) of patients. Vancomycin levels in 9.7% (n=3/31) patients were taken more than 48 hours after commencing treatment. Actions including dose deferral or dose adjustment were more frequent when the returned levels were above therapeutic range than below.

164: Shorter is better: audit of treatment duration for low severity community acquired pneumonia in secondary care.

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Introduction

National guidelines for the treatment of community acquired pneumonia (CAP) recommend a treatment duration of 5 days for low severity presentations (CURB-65 scores of 0-2). As part of a wider collaborative project to promote appropriate short durations of treatment, we audited the treatment duration for CAP - a common reason for admission to hospital - in six hospitals across the Midlands region of England, and one in Wales.

Methods

Retrospective audit of patients with low severity CAP (CURB-65 scores 0-2) who were discharged within 5 days of admission. Data was collected on the CURB-65 score, the antibiotics prescribed during admission and on discharge, and the duration of treatment for inpatient period and quantity supplied on discharge. Data was analysed in Microsoft Excel.

Results

201 patients in seven hospitals in England and Wales were audited. Overall, 59% of patients received treatment duration in excess of 5 days; oversupply was seen at each CURB-65 score. For CURB-65 = 0, the median excess duration was 2 days (IQR 0-3), while for scores of 1 and 2, there was a median excess of 1 day’s treatment (Interquartile range 0-2 days). 54.7% of patients received co-amoxiclav as inpatients, and 35% on discharge, despite this antibiotic not being recommended by any trust for treatment of low severity CAP.

Conclusion

There is widespread oversupply of antibiotics for patients with low severity CAP in secondary care. Adherence to local guideline recommendations is poor, both for duration of treatment and recommended antibiotic.

173: Antimicrobial stewardship in the emergency department: a clinical audit

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The rising problem of antimicrobial resistance paired with risk of hospital associated infections and adverse effects that come with inappropriate prescriptions of antimicrobials justify the crucial role of antimicrobial stewardship. This is especially relevant to emergency departments which are often the first point of contact for a patient with infectious disease with healthcare. This audit examined antimicrobial practises in the emergency departments of Lancashire Teaching Hospitals, focusing on prescribing compliance with established hospital guidelines. The audit also evaluated adherence with taking blood cultures prior to giving antimicrobials, antimicrobial reviews, sepsis management and general appropriateness in antimicrobial prescription over a 24-hour period using the hospital electronic system to procure patient data. 441 patients were reviewed over a 24-hour period. 46 (10.4%) of these were prescribed an antimicrobial. Community acquired pneumonia was the most common indication for prescribing antimicrobials (31%). When a source was identified, the data showed high rates of prescribing compliance in line with guidelines as per source of infection. Four patients were prescribed antimicrobials for sepsis of unknown source. Of these cases, a source was identified and documented for three of these four, so more targeted antimicrobials should have been prescribed. Of the patients admitted, 86% underwent an antimicrobial review within 72 hours. The findings highlighted areas of good practice, and room for improvement, particularly with regard to the correct identification and prescribing for source. This will require further education and re-audit to assess compliance.

174: Gram negative blood-stream infections (BSI) among patients with haematological malignancy in a National Bone Marrow Transplant Unit at St James's Hospital 2023 – A retrospective review

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Background

Gram negative BSI among patients with haematological malignancy may cause significant morbidity and mortality. Local recommendations for empiric therapy for febrile neutropenia are piperacillin-tazobactam plus amikacin, despite surveillance data indicating approximately 20% pip-tazobactam resistance. Modifications of this empiric recommendation occur based on recovery of resistant organisms

Aims

To investigate whether empiric β-lactam antimicrobial therapy advised prior to, and at the time of a Gram-negative bacilli blood culture positivity was appropriate, based on the final identification and susceptibility test results.

To examine the outcomes of patients who received a sub-optimal β-lactam therapy.

To quantify the use and appropriateness of restricted antimicrobial prescribing.

Methods

The final identity and susceptibility profile of significant Gram-negative blood culture cases were compared to the antimicrobial susceptibilities of the recommended empiric therapy. A chart review of clinical outcomes was conducted among patients who received sub-optimal antimicrobials. Restricted antimicrobial prescribing was quantified, and appropriateness investigated.

Results

91 Gram negative organisms were recovered from 67 patients. 4% (N=4) received a sub-optimal β-lactam antimicrobial empirically. 13% (N=13) received advice from microbiology at the time of positivity that was later modified on final identification and susceptibility results. No patient died from sepsis among these cohorts. 57% (N=24) of patients received a restricted antimicrobial (N= 42) where a first line agent would have sufficed.

Conclusion

Maintaining empiric pip-tazobactam and amikacin despite high rates of resistance may be justified if prior colonisation is used to guide empiric therapy but this results in high rates of carbapenem usage.

175: Assessment of the implementation of the Antimicrobial Review Kit (ARK) on prescribing practices: a clinical audit

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Antimicrobial resistance resulting from overuse of antibiotics has been a continual worldwide concern. To improve antimicrobial stewardship, Lancashire Teaching Hospitals implemented the Antimicrobial Review Kit in late 2023. It requires prescribers to assess the likelihood (Final, Probable, Possible) of an infection in their patients before deciding for an antibiotic treatment. This point prevalence audit evaluated the compliance with the Antimicrobial Review Kit on a single day in April 2024. Complete prescribing data was extracted from the local electronic prescribing and medicines administration (EPMA) system from all 75 clinical locations. 605 prescriptions were analysed. The ARK decision tool was not used in 84 (13.9%) of prescriptions. These, and other exclusions left a data set of 447 prescriptions. Case note review suggested that the likelihood rating applied was correct in 57% of prescriptions. EPMA review showed that 91% of prescriptions underwent an antimicrobial review within 72 hours and 100% of antimicrobials were stopped once an infection was ruled out. Although most prescriptions were completed using the ARK decision tool, 43% received inappropriate grading, with the majority classified into an inappropriately low likelihood category. Most prescriptions have a recorded antimicrobial review within 72 hours, and antibiotics are discontinued when an infection is ruled out. This suggests that while the overall application of ARK has been successful, nuanced interpretation of infection likelihood requires further educational support from the antimicrobial stewardship team.

181: Antimicrobial alert for high-risk fluoroquinolone prescribing for in-patients across multiple NHS hospitals

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Background: Fluoroquinolone administration is associated with increased tendinopathy in patients on concurrent corticosteroids, aged ≥60 years old and with chronic kidney disease. Avoiding unnecessary use in these high-risk groups is recommended by MHRA. Yet operationalising this in a busy clinical setting where fluoroquinolones are widely prescribed poses some challenge. Here, a computer decision support system (CDSS) alert was created to identify high-risk prescribing for attention of the antimicrobial stewardship team

Methodology: A rule-based alert using established CDSS (ICNET, Baxter) was introduced in Feb-2024 following MHRA alert. This alert identified in-patients with systemic fluoroquinolone and concurrent corticosteroids in real-time. The impact on prescribing post-alert was reviewed for this study.

Results:
Over four months (Feb – June 2024), 83 alerts highlighting concurrent fluoroquinolone and corticosteroid prescribing was generated for 81 unique in-patients across two NHS hospitals (London, UK). The median age was 70years, 46/83 were female and 12/83 had chronic kidney disease. Respiratory tract infection was the most common indication (61/83).
Fluoroquinolone was stopped or switched in 47/83 cases following AMS team intervention. Steroids were stopped in another 4 patients post-review. Nine patients continued on fluoroquinolone therapy on advice of AMS team due to limited alternative options. Six patients were discharged or deceased prior to review and 8 cases had no documented follow-up by the AMS team.

Conclusion: Using automated alert systems, targeted AMS interventions can be introduced to reduce fluoroquinolone co-prescribing with corticosteroids in line with national recommendations. This ensures the highest risk patients are identified and risks mitigated where suitable

187: Assessing the Quality of Antimicrobial Review to Improve Antimicrobial Stewardship Compliance: A Clinical Audit

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[1]Lancashire Teaching Hospitals NHS Foundation Trust

Antimicrobial stewardship is an important multifaceted approach to reducing antimicrobial consumption, drug resistance and inappropriate use of antimicrobials. Inappropriate prescribing can lead to an increase in adverse effects including toxicity, Clostridioides difficile-associated diarrhoea, increased health care costs and antimicrobial resistance. Additionally, a prompt switch from intravenous (IV) to oral antimicrobials, where possible, is associated with a reduced incidence of cannula-related infections, reduced costs, staff time savings, smaller carbon footprint and earlier discharge of patients. To ensure that antimicrobials are being used appropriately, daily reviews should be conducted during ward rounds. To assess compliance, this audit completed a retrospective study of the quality of those reviews.

A point prevalence audit was completed in May 2024 on patients who had been treated with antimicrobials for more than 72 hours. Clinical case notes were reviewed at 72 hours to ensure there was a documented antimicrobial review using the trusts ward round proforma, a source of infection had been identified and if IV therapy was continued, it was appropriate to do so. The trust requires 90% compliance with each metric. Of the 50 prescriptions audited, 84% had a clearly documented antimicrobial review using the ward round proforma and 72% had a clear source of infection identified. 32 prescriptions continued to be given IV, 77% of those were appropriate to continue. The standards reviewed at 72 hours fell below the trust's requirements of 90%. Following audit, further in-depth review of the ward round proforma is required to improve the quality of antimicrobial reviews.

225: Halfway There: Our Path to Achieving 55% Access Classification Antibiotics Use

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Introduction:
The 5-year National Action Plan (NAP) to combat antimicrobial resistance (2024-2029) targets 70% usage of “Access” category antibiotics. Our acute Trust has increased “Access” antibiotic use from 35% to 55% over the past decade. Steps taken to reach this target were evaluated.

Method:
- Reviewed and compared antimicrobial guidelines from 10 years ago to current guidelines.
- Assessed service provision against historical data.
- Analysed microbiology calls and referral forms.
- Reviewed antimicrobial consumption data over time.

Results:

Key Interventions identified:

1. Empirical Guideline Changes
- Replaced Clarithromycin with Doxycycline for treatment of pneumonia and step-down options for cellulitis.
- Substituted Co-amoxiclav with “Access” antibiotics for:
  - Community-acquired aspiration pneumonia (Amoxicillin)
  - Lower UTI with systemic symptoms (Gentamicin)
  - Post-operative wound infections (Flucloxacillin + Metronidazole)

2. Utilising Flucloxacillin and Benzylpenicillin in 24-hour elastomeric devices via OPAT service.

3. Restricting "Reserve" class antibiotics and novel Carbapenems as "Microbiology advice only".

4. Introduction of electronic microbiology referral forms.

5. Attendance to MDT meetings and weekly antimicrobial stewardship rounds (AMS) by Microbiologists and antimicrobial pharmacists.

6. Pharmacists reporting broad spectrum antibiotic use to Microbiologists.

Discussion:
Guideline updates encouraged first-line use of “Access” antibiotics. Antibiotic restrictions, electronic referrals and MDT attendance prompt microbiology consultation improving antimicrobial stewardship and using “Access” antibiotics. Future plans include further guideline updates, introduction of an electronic prescribing systems and a penicillin allergy de-labelling service.

Conclusion

Increased “Access” antibiotic use was due to guideline changes and enhanced microbiology access. Further guideline reviews, digitalisation and allergy delabelling are planned

226: The SOLARIO trial: addressing the burden of broad-spectrum antimicrobial prescribing for osteomyelitis and prosthetic joint infection

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Aims

The SOLARIO trial is a randomised controlled non-inferiority trial of antibiotic strategy for bone and joint infection, comparing short or long post-operative systemic antibiotic prescribing. This analysis compared systemic antibiotics in the intervention and standard of care arms of the trial, for 12 months after index surgery.

Methods

Prospective enquiry aimed to capture all systemic post-operative antibiotics from health records and patient recall, at randomisation, 6 weeks, 3-6 months and 12 months after surgery.

Results

251 patients were randomised to receive up to 7 post-operative days, and 249 patients, to standard duration systemic antibiotics. 5 participants in the short group and 2 participants in the long group withdrew from follow-up. Complete data were available for 237 participants in the short group and 236 participants in the long group.

Over the 12 month study period, participants assigned to standard duration received a mean of 74.9 antibiotic-days. Participants assigned to short systemic antibiotics received a mean of 27.5 antibiotic-days. The most commonly prescribed antibiotics in both treatment groups were vancomycin and meropenem: 7.1 days prescribed per participant in the long group, and 6.3 days in the short group (p=0.37). WHO ‘watch’ and ‘reserve’ group antibiotics accounted for 39.4 antibiotic-days per long group participant, and 16.5 antibiotic-days per short group participant.

Discussion

Participants in the short arm of the SOLARIO trial received considerably fewer days of all antibiotic classes, and particularly those antibiotics restricted in the WHO AWaRe classification (2021).

237: Duration of antimicrobial treatment for Pseudomonas aeruginosa bacteraemia: a review of 50 adult episodes at a tertiary referral hospital.

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Background
There is no standardised guidance for the optimal duration of antimicrobial therapy for Pseudomonas aeruginosa bacteraemia. A minimum duration of 14 days is often recommended when there is no confirmed source, especially in immunocompromised patients.

Aim
To review the duration of antimicrobial treatment and outcomes of P. aeruginosa bacteraemia in a tertiary hospital.

Methods
50 episodes (49 adult patients) of P. aeruginosa bacteraemia episodes which were occurred in the Queen Elizabeth Hospital Birmingham in 2023 were reviewed. Electronic patient records and microbiology laboratory records were reviewed. Data extracted included patient details: age; immune status; specialty. Antimicrobial treatment details included antibiotic duration, IV to oral switch and outcome.

Results
Median age was 67 years (range 26-93). Immunocompromised patients comprised 39/49 (79.6%) patients, with 20/39 (51.3%) of immunocompromised patients neutropenic. Haemato-oncology was the most predominant specialty (25/49, 51.0%) followed by Oncology (7/49, 14.3%) and General medicine (5/49, 10.2%). 3 patients had solid organ transplants. 4 patients started on end of life care were excluded from the antimicrobial treatment analysis. 28/46 (60.9%) episodes were treated for < 14 days and 21/28 (75%) recovered. 17/21 (80.0%) of these were immunocompromised. For neutropenic patients, 13/19 (68.4%) were treated for <14 days. 12/13 (92.3%) recovered. 9/12 (75%) who recovered were treated for 7-10 days.

Conclusions
Our experience supports that shorter durations of antimicrobial treatment are effective for successful treatment of P. aeruginosa bacteraemia, even in immunocompromised patients. The duration should be individualised for patients based on the underlying source and clinical response.

257: What type of advice is provided by a pharmacy antimicrobial stewardship team within an NHS teaching hospital

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Introduction
Antimicrobial pharmacy teams play a key role in helping to deliver stewardship programs [1]. The traditional role of AMS pharmacy teams has centred around, monitoring, dosing advice, guideline development and education. However, given the current shortage of microbiologist's pharmacy AMS teams have taken on more roles.

Methods
Data was collected from the electronic clinical notes system (PPM+). Entries were filtered for pharmacy and clinical microbiology. This was the current practice of how to document entries within the pharmacy AMS team.

Results
During 22/23, 1753 entries were made with the top 5; OPAT/Oral monitoring (644), IntraVenous to Oral Switch (IVOS) (309), choice of therapy (273), Infection Prevention and Control (IPC) multidisciplinary team (MDT) (114) and Infective Endocarditis MDT (111).
During 23/24, 2235 entries were documented with the top 5; OPAT/Oral monitoring (957), IVOS (456), Choice of therapy (345), Infective endocarditis MDT (196) and bacteraemias (106).
There was a 27% increase in the number of entries from 22/23 to 23/24, with the biggest being OPAT/Oral monitoring.

Conclusion
Pharmacy AMS teams are in a perfect position to provide specialist advice. The findings are consistent with current evidence that AMS pharmacy teams are playing a more active role in choice of therapy and IVOS advice(1).
OPAT continues to dominate the workload of our AMS pharmacy team despite a dedicated pharmacy or microbiology role for this.

1. Dighriri IM, et al. The Role of Clinical Pharmacists in Antimicrobial Stewardship Programs (ASPs): A Systematic Review. Cureus. 2023 Dec 8;15(12):e50151. doi: 10.7759/cureus.50151. PMID: 38186441; PMCID: PMC10771624.

265: A Qualitative Study to Explore the Facilitators and or Barriers to Intravenous to Oral Switch of Antibiotics for Different Healthcare Professionals

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Background

Timely antimicrobial stewardship can decelerate antimicrobial resistance, avoiding consumption of unnecessary antibiotics. Intravenous antibiotics are often continued longer than indicated, contributing to prolonged admissions, increased costs and infection risk. Early intravenous to oral switch of antibiotics has been widely utilised in antimicrobial stewardship policies worldwide to minimise unnecessary consumption. The aim of this study is to explore the barriers and facilitators to intravenous to oral switch of antibiotics for different healthcare professionals.

Methods

Doctors, nurses, pharmacists and pharmacy technicians participated in semi-structured interviews. Participants were asked questions relating to IV to oral switch (IVOS), IVOS training, IV antibiotic prescriptions and inter-professional relationships. Interviews were recorded and transcribed. Thematic analysis of the interview transcripts was conducted using methods described by Braun and Clarke.

Results

Preliminary results revealed a common theme that decisions to switch from IV to oral treatment remain with the doctors. Junior doctors often deferred IVOS decisions until senior ward rounds. A barrier to IVOS for pharmacists was the hierarchy of medical team structure. Pharmacists presume senior doctors routinely review IV antibiotics and therefore were appropriate. Pharmacy technicians faced an educational and professional barrier, feeling they lacked training to suggest an IVOS, or their input would not be valued. Nurses cited limited capacity to suggest IVOS due to time constraints and lack of experience.

Conclusion

IVOS interventions should focus on empowering healthcare professionals, supporting them to suggest IVOS. Education on the negative effects of IV antibiotic overuse supplemented with IVOS guidelines may reduce inappropriate antibiotic use.

268: Quality improvement project on antibiotic rationalisation in an acute medical unit

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INTRODUCTION
Antibiotic resistance is related to the inappropriate use of antibiotics. A report published by the UK Health Security Agency in November 2023 states that an estimated 58,224 people in England had an antibiotic resistant to infection in 2022 - a rise of 4% since 2021 (55,792). Rational antibiotic usage reduces the risk of antimicrobial resistance.

AIM
To improve prescribers adherence to Hospital guidelines (Micro Guide) when prescribing antibiotics and to improve documentation of the indication and review-by date on the Electronic Prescribing and Medicines Administration (EPMA) system.

METHODS
Two Plan-Do-Study-Act cycles were conducted between October 2023 and February 2024. Data was collected retrospectively for patients admitted to the Acute Medical Unit and prescribed antibiotics, over a week in each cycle. This included the choice of antibiotic used for specific indication, documentation of the indication and review date on EPMA and the working diagnosis at the time of prescribing the antibiotics. The interventions used were departmental teaching sessions and posters which were placed throughout the department for visual prompts.

RESULTS
The interventions improved the compliance to Hospital antibiotic prescribing guidelines from 41.6% in the first cycle (n=24) to 48% post intervention (n=42). Documentation on EPMA improved from none to 5%. Only 12% of patients who received antibiotics had a non-infection diagnosis compared with 26% in the first cycle.

CONCLUSION
Overall, there was some improvement in prescribers adherence to Trust guidelines as well as in documentation of indication and review by dates. More needs to be done to reduce antibiotic overprescription.

8: An Unusual Case of Acute Appendicitis

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BACKGROUND
Schistosomiasis is a parasitic infection which causes significant morbidity and mortality in endemic regions. Presentation and pathology can vary depending on the anatomical site of infection and the causative species, though infection tends to cause intestinal or urogenital disease. Rarely, schistosomiasis can cause appendicitis, even more rarely in non-endemic regions. The case discussed herein describes a white-British female, who had historically received eradication therapy for schistosomiasis, presenting with uncomplicated acute appendicitis. Following surgical intervention, histopathological investigation of the resected specimen identified the presence of calcified schistosomal eggs in the appendiceal lumen causing appendicitis.
CASE PRESENTATION
A fit and well 55-year-old British female presented with a short history of right iliac fossa tenderness, pyrexia and raised inflammatory markers. Past medical history was significant for previous schistosomiasis, for which the patient had received eradication therapy twenty years previous. Cross-sectional imaging confirmed uncomplicated acute appendicitis, which was managed with antimicrobial therapy and surgical intervention. Subsequent histopathological investigation identified the presence of calcified schistosomal eggs causing an obstructive appendicitis. The patient was found to have no evidence of active infection, requiring no further treatment.
CONCLUSION
This case demonstrates a rare cause of appendicitis and a rare presentation of chronic schistosomiasis infection in a non-endemic region. Appendiceal schistosomiasis is infrequently encountered in developed countries, however with increasing global movement it is becoming increasingly significant.

Clinical cases

25: Invasive Trichoderma longibrachiatum infection in a neutropaenic patient

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Trichoderma species are saprophytic filamentous fungi found in soil and decaying plant matter. They are a rare cause of human infection but can cause life-threatening disease in immunosuppressed patients with approximately 50% mortality. The few reports of Trichoderma infection in the literature are in patients with haematological malignancies and those requiring peritoneal dialysis with common sites of infection being lung and peritoneum. In the absence of clinical breakpoints to interpret antifungal susceptibility testing or established clinical treatment guidelines, systemic antifungals such as amphotericin B or voriconazole are commonly used, in some cases combined with surgery. We present the case of invasive pulmonary infection with Trichoderma longibrachiatum in a neutropaenic patient being treated for acute myeloid leukaemia.

26: Challenging Acanthamoeba keratitis secondary to contact lens use

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A 40-year-old female with unilateral mild keratitis in December 2021 was commenced on topical Ofloxacin in another hospital. Few weeks later, slit lamp examination revealed corneal perineural infiltrates. G.polyhexamethylene biguanide (PHMB) 0.02% was started for suspected Acanthamoeba keratitis (soon confirmed by corneal scrape PCR). Six months on, unimproved visual acuity with persistent keratitis was noted. Later, on a trip abroad she developed dense corneal abscess, was commenced on topical antibiotics and azathioprine; PHMB was discontinued. Ten months into the infection she re-presented with dense stromal infiltrates. Repeat corneal scrape confirmed Acanthamoeba.

October 2022, she was referred to us (specialised cornea centre), with extremely painful eye, hand movement visual acuity, larger ulcer with deep infiltrates. G.PHMB 0.02% was re-started, G.Chlorhexidine 0.02% and systemic voriconazole were added. She underwent emergency penetrating keratoplasty for corneal perforation. After susceptibility results from novel local laboratory tests, higher concentration of topical PHMB 0.06% was used, along with Chlorhexidine 0.2%, Voriconazole 2% with systemic miltefosine and prednisolone.

January 2023, emergency penetrating keratoplasty was performed for further corneal perforation. Corneal scrape was negative for Acanthamoeba. Over next two months, she underwent corneal gluing, intraocular lens removal and amniotic membrane transplant. Bandage contact lens remained negative for Acanthamoeba. Treatment was gradually tapered off, but topical PHMB was continued for further six months. Visual acuity remained hand movement, but the eye was stable and pain-free.

Diagnosis of Acanthamoeba keratitis is sometimes challenging which may delay appropriate therapy and unknown parasitic resistance to drugs can potentially cause serious visual loss.

40: Pericardial puzzle: Unveiling Mycobacterium tuberculosis presenting as an isolated pericardial effusion

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A 79-year-old man with a history of hypertension, hyperlipidemia, and paroxysmal atrial fibrillation/flutter underwent hospitalization in upstate New York due to worsening dyspnea, chest pain, and bilateral lower extremity edema. Initial lab workup showed elevated BNP levels (329 pg/mL), along with increased inflammatory markers (ESR 50 mm/h, CRP 109.6 mg/L). Echocardiogram revealed a moderate pericardial effusion, prompting treatment with ibuprofen and colchicine for suspected pericarditis. Despite treatment, his symptoms persisted. On repeat echocardiogram two months later, an effusion was noted without tamponade. Elective pericardiocentesis drained 400 ml of blood-tinged fluid, with subsequent fluid analysis showing a pH of 7.3, protein of 3.4, and LDH 1139. However, initial tests for infectious etiology, including gram stains, were negative. Three days post-discharge, the pericardial fluid AFB stain returned positive, with cording noted in the cells. The patient was readmitted and initiated on a tuberculosis treatment regimen including rifampin, amikacin, clarithromycin, ethambutol, and cefoxitin. A delay in diagnostic testing prompted a shift to RIPE (rifampin, isoniazid, pyrazinamide, and ethambutol) therapy. Subsequent AFB culture-confirmed Mycobacterium tuberculosis DNA, diagnosing extrapulmonary tuberculosis causing pericarditis and effusion. This case highlights the diagnostic challenge of identifying extrapulmonary tuberculosis and underscores the importance of considering tuberculosis in patients with unexplained effusions, especially when initial tests are inconclusive. Early recognition and prompt initiation of appropriate treatment are crucial for improving patient outcomes in such cases.

46: A Fishy Headache

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We describe a rare case of Streptococcus agalactiae (group B) meningitis in association with Strongyloides hyperinfection syndrome (SHS). A usually well 42-year-old Bengali man, presenting with headache and fever, grew S. agalactiae in blood cultures and S. agalactiae RNA was detected in cerebrospinal fluid by 16S polymerase chain reaction. During treatment with ceftriaxone, he developed urticaria and eosinophilia which prompted investigation for Strongyloides, serology for which returned positive. He made a complete recovery after two weeks of ceftriaxone and two doses of ivermectin. Meningitis due to enteric bacteria is a known complication of SHS, however S. agalactiae meningitis has never been reported in this context, this being the first case to our knowledge. We posit our patient had a high colonising burden of S. agalactiae due to frequent fish consumption, which primed him for translocation. Additionally, extensive investigation did not reveal immunodeficiency, which would commonly be expected in SHS. An important learning point is to consider Strongyloidiasis in patients with S. agalactiae meningitis without other obvious risk factors.

49: Multiple brain abscesses due to Listeria monocytogenes

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Background

Listeria monocytogenes brain abscess is a very rare phenomenon accounting for about 10% of listeria central nervous system (CNS) infections, and its clinical manifestations lack specificity. We have descripted a case of listeria brain abscesses hoping to increase awareness and attention to the management of the disease.

Case description

A 72 years-old female presented with fever, confusion and left sided weakness of 24 hours duration on a background of non-specific neurological and cognitive signs for a couple of weeks. Patient was on methotrexate for rheumatoid arthritis. Head imaging identified multiple ring enhancing lesions within the right frontal, basal ganglia and temporal regions with significant vasogenic oedema. Blood culture isolated Listeria monocytogenes.
Neurosurgeons and microbiologists opted for conservative management. Amoxicillin with gentamicin was started. She developed rash during the treatment and was switched to meropenem and later to oral co-trimoxazole (methotrexate was withheld) to facilitate discharge. She had approximately 12 weeks of antibiotics treatment along with neuro and occupational physiotherapy. The repeat MRI at 10 weeks of the antibiotic treatment showed involution of the cerebral abscess cavities.

Discussion

Listeria brain abscess is a very rare form of listeriosis. The brain imaging findings along with blood cultures are of major importance for early detection and treatment, which are mandatory to ensure the best prognosis. The treatment choice is amoxicillin combined with gentamicin with other options being meropenem, co-trimoxazole and linezolid. Diagnosis was early and we used amoxicillin, gentamicin, meropenem and co-trimoxazole in our case and achieved good prognosis without surgical intervention.

53: An Atypical Case of CNS Infection in Sickle Cell Disease

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A 30-year-old female with sickle cell disease presented with a short history of headache, fever, and vomiting. There was no associated confusion or neurological deficit. She was 6 months post-partum. She was treated with Ceftriaxone and Aciclovir while investigated for a suspected CNS infection. Blood tests showed a negative HIV test, CRP of 1 and White Cell Count (WCC) of 7.4 x106. CT head was unremarkable. Lumbar puncture (LP) was performed and showed a WCC of 635x106 with 100% lymphocytes, protein count of 1.33g/L and glucose 2.6mmol/ml. Cerebrospinal fluid culture, bacterial and viral PCR panels were negative. Toxoplasma PCR on CSF was positive with a CT value of 34.48, at which point microbiology was consulted. The patient was switched to Sulphadiazine and Pyrimethamine for suspected cerebral toxoplasmosis. Her case was discussed at microbiology's complex patients MDT.

MRI Brain was unremarkable, as was fundoscopy. Toxoplasma PCR on blood was negative, and serology revealed a positive IgG but negative IgM both during this admission and her prior pregnancy. 16s PCR, MTB-PCR and Cryptococcal antigen testing on CSF were negative. A CT-TAP showed no radiological evidence of tuberculosis. An LP was repeated on day 11 of admission which reconfirmed positive Toxoplasma PCR (CT value 37.72). A repeat bacterial/viral PCR panel was negative. The patient improved with toxoplasma treatment and a decision was made to complete a total course of 6 weeks of treatment. This case highlights the difficulties of interpreting CNS diagnostics and the importance of a multidisciplinary team approach to these cases.

57: Going orf course: delayed diagnosis of parapoxvirus infections leading to inappropriate antimicrobial use

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Case descriptions
Case 1
A fifty-year-old immunocompetent sheep farmer presented with a painful lesion on her finger. The lesion was mis-diagnosed as bacterial infection by three different general practitioners; the correct diagnosis was made when the patient attended her local emergency department. Parapoxvirus DNA was detected on a skin swab.

Case 2
A twenty-five-year-old immunocompetent veterinary nurse presented with a painful lesion on her finger after being bitten by a lamb. The lesion was mis-diagnosed by multiple specialists and the patient received three courses of unnecessary antimicrobials, the last of which caused an allergic reaction. The correct diagnosis was made by a hand surgeon; parapoxvirus DNA was detected on a skin swab.

Discussion
Orf virus is a member of the genus parapoxvirus. Orf is an infection of sheep and goats, but humans can become infected after direct contact with an infected mammal. Whilst lesions classically appear on the fingers, hands or forearms due to this mechanism of transmission, peri-anal orf in sheep farmers after auto-inoculation from hand lesions has also been reported. Orf is normally a self-limiting infection but it has the potential to cause more severe infection in immunosuppressed individuals. A thorough history, including occupation and animal exposure, is key to making a prompt diagnosis of orf. Testing by PCR is done at the UKHSA Rare and Imported Pathogens Laboratory (RIPL) at Porton Down. Early recognition is required in order to prevent unnecessary antimicrobial therapy or surgical exploration. There is no specific treatment, although extensive lesions may require debridement.

72: Multiple brain abscesses in an immunocompetent patient

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Background

In immunocompetent patients, bacteria are responsible for >95% of brain abscesses. The triad of headache, fever and focal neurological deficit is complete in ~20% of patients on admission. A 6-week combination of third-generation cephalosporin and metronidazole will cure most cases of community-acquired brain abscess in immunocompetent patients.

Case description

A 58 year old, fit & well immunocompetent gentleman presented with sudden onset of generalized headache, pins and needles in the right fingers. He was started on dexamethasone and Ceftriaxone but rapidly deteriorated with decrease in GCS, slurred speech & right arm & hand weakness. MRI showed multiple intracranial and upper cervical spinal cord ring enhancing lesions.
Neurosurgeons and microbiologists opted for conservative management. Intravenous meropenem, drugs for Toxoplasmosis & TB were started. All tests returned negative except for lung lymph node tissue 16S PCR which reported as mixed – Strep angionosus gp & Viridans Strep & Parvomonas micra. OMFS extracted UL5 & UL6 considering it as the source. Toxoplasmosis & TB treatment was stopped. Meropenem was continued for 5 weeks and then the patient was discharged on Ceftriaxone & Metronidazole through OPAT.
The repeat MRI at 6 weeks of the antibiotic treatment showed involution of the cerebral abscess cavities. The patient was discharged with no neurological deficit.

Discussion

We achieved good prognosis with 7 weeks of antibiotics course. The learning points are that early accurate diagnosis and standardized treatment can effectively promote the recovery of neurological function as well as reduce the morbidity and mortality and improve the prognosis.

73: Diagnosis of Strongyloidiasis Uncovered by Colonoscopy Biopsy Findings

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A 73-year-old Chinese man underwent an elective colonoscopy for follow up of colonic polyps in November 2023. He presented with change in bowel habit and abdominal pain since 2016. He had no fever, vomiting, rectal bleeding or constitutional symptoms. He had medical history of chronic obstructive pulmonary disease (COPD) and eczema with frequent flare ups. Physical examination was unremarkable except for chronic eczematous skin changes. There had been episodic elevation of eosinophil count since 2016.

Colonoscopy this time showed multiple sigmoid diverticula and more than ten colonic polyps. Most of the polyps were tubular adenomas with low grade dysplasia. In one cecal polyp, there were abundance of eosinophils mingled with histiocytes and a few multinucleated giant cells. In between scanty filariform larvae suggestive of Strongyloides stercoralis were noted. Stool microscopy later confirmed the presence of larvae.

On further history taking, the patient recalled long-standing symptoms such as cough, recurrent wheezing and pruritus. Multiple courses of steroid were given for presumed flare up of his underlying eczema and COPD.

This case illustrates the importance of maintaining a high index of suspicion for strongyloidiasis in patients on immunosuppressants, as the symptoms could be non-specific and hyperinfection could be fatal. Finding of multiple or eosinophilic polyps on colonoscopy may provide clues to the diagnosis, even in the absence of overt symptoms. In endemic population, it is recommended to screen patients with serology, stool PCR and culture before initiation of immunosuppression. Preemptive treatment may be considered if an appropriate screening test is not available.

76: Faux-paw: Capnocytophaga canimorsus endocarditis from a dog lick: A case report

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Capnocytophaga canimorsus (C. canimorsus) is a fastidious Gram negative bacillus. It is an oral commensal in dogs and cats; and a rare cause of infective endocarditis, often associated with dog bites. We present a case of C. canimorsus infective endocarditis complicated by aortic regurgitation and root abscess, in a patient with a history of childhood infective endocarditis. Unusually, this case occurred because of a dog licking the site of an open wound. It is important to remember that dog contact perceived as innocuous, such as being licked, can be a significant source of infection particularly in the context of an open wound acting as a port of entry. Over a third of households in the United Kingdom own a dog as a pet; with C. canimorsus infections thought to be on the rise (in part due to increased pet ownership), there is a considerable safety benefit to be had in ensuring pet owners are educated on such risks, as well as the appropriate preventative steps. The patient required source control through surgical intervention, given the presence of uncontrolled infection; and underwent re-do aortic valve surgery with aortic valve replacement. 16S ribosomal ribonucleic acid sequencing from the excised valve tissue confirmed C. canimorsus with 99.9% similarity. The patient was treated with beta-lactam antibiotics, and discharged home.

96: Abstract title: A case of septic arthritis caused by Clostridium perfringens in native joints in an immunocompetent patient

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Introduction: Current literature documents very few cases of Clostridium perfringens septic arthritis, which predominantly occur in the context of immunosuppression or penetrating trauma to the joint. We describe a rare case of Clostridium perfringens septic arthritis affecting two native joints in an immunocompetent patient without any preceding history of trauma.

Case presentation:
The patient is an 81-year old male, with a background of COPD and Type 2 diabetes. He presented with synovitis of the knee and elbow. Inflammatory markers on admission: WCC- 10.5x10^9/L, CRP-123.2mg/L. He was commenced empirically on IV Flucloxacillin. X-ray showed marked degeneration of the left medial and patellofemoral joint with large knee effusion. The patient underwent formal debridement and synovectomy in theatre. Clostridium perfringens was isolated from both peripheral blood cultures and joint washout samples. Antibiotics were switched from IV Flucloxacillin to IV Coamoxiclav based on sensitivities. The patient denied any history of trauma. However further history revealed he had chronic diarrhoea symptoms, under investigation by his GP. Investigative work up including echocardiogram and CT chest/abdomen/pelvis yielded no significant findings. Colonoscopy was recommended but not felt appropriate due to patient age. The patient responded well to 4 weeks' Coamoxiclav treatment with CRP decline from 305 to 13 and was successfully discharged.

Conclusion: This is an unusual case of Clostridium perfringens septic arthritis affecting multiple joints in an immunocompetent patient in the absence of previous traumatic injury. Given the clinical presentation, we postulate haematogenous seeding from a gut translocation event in a patient with underlying osteoarthritis.

106: Strongyloides stercoralis - what the helminth are you doing here?

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Strongyloides stercoralis is a soil transmitted helminth that causes a spectrum of disease from chronic, asymptomatic intestinal carriage to a severe hyperinfection or disseminated disease process more often seen in those with immunodeficiency. It is recognised as a neglected tropical disease and epidemiological data is scarce in view of the difficulties associated with diagnosing infection. The vast majority of cases are acquired in tropical or subtropical regions with transmission due to bare footed contact with soil contaminated with infective filariform larvae.

We present a case of UK acquired Strongyloides stercoralis. A 20 year old male attended the emergency department with severe abdominal pain, diarrhoea, hypokalaemia and eosinophilia. The patient denied any recent travel abroad and in fact had never left the UK. Multiple stool samples were sent for microscopy of which one was identified as containing the rhabditiform larvae of S.stercoralis. On revisiting the social history, the patient reported sexual intercourse with a male partner, originating from South America, within the last year - this being the most likely source of acquisition. The patient was successfully treated with two doses of Ivermectin. A full sexual health screen was performed and the patient was found to be HIV negative.

Parasitic infections are often difficult to diagnose, some more so than others. We should remain vigilant to the possibility of such infections in patients who are vulnerable and/or presenting with an appropriate clinical history even in the absence of a typical exposure history.

121: A straight but curvy conundrum - no toxin, no problem?

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Background
Vibrio cholerae is common in certain countries, but cases in the UK are low. In particular, Non O1 Non O139 (NOVC) is rare, with only one non-travel related case being reported in the literature to date.

Case Summary
66 year old housebound female presented with renal failure likely secondary to dehydration from gastroenteritis.
Admitted to ICU for support including dialysis.
IV co-amoxiclav given empirically.
Blood cultures showed gram negative bacilli, stool Biofire reported as negative.

Initial growth was a fully sensitive non lactose fermenting gram negative organism, which was pink on Thermo Scientific™ Brilliance™ UTI Clarity agar (indicative of E coli).

The curve came with Vitek 2 identification of Vibrio cholerae (96%) - still fully sensitive.

Next steps
Initially all parties were somewhat skeptical as to the validity of the result, but nonetheless, actions were taken:
- Ward and infection control informed:
- Appropriate isolation in place
- Extended travel history from patient and contacts (no travel)
- UKHSA informed (limited public health actions unless confirmed O1 or O139).

Additional laboratory investigations:
Biofire had flagged Vibrio cholerae positive, but automatically suppressed (history of false positives).
Final confirmation of Non O1 non O139 Vibrio cholerae (NOVC) by the Gastrointestinal Bacteria Reference Unit.

The patient made a full recovery.

Discussion:
This case highlights the possibility of NOVC here in the UK, especially as reports from other countries indicate rates may be rising. Clinicians need to be aware that clinical, epidemiological and laboratory aspects may not be typical.

122: Cladophialophra bantiana disseminated infection, a case report from Saudi Arabia

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We report a case of 16 years old male known to have chronic granulomatous disease (CGD). He lived in the central region of Saudi Arabia.
He was referred to our centre for further investigations after an initial scan showed multiple bony lesions, pulmonary nodules and a solitary brain lesion. He underwent a biopsy from the skeletal lesions that showed evidence of lymphocytic infiltrates with histiocytes and non-caseating granulomas. Extended cultures were negative including fungal culture and work up for TB.
He was empirically treated with voriconazole and co-trimoxazole after discharge from the hospital with a plan for outpatient follow up.
He was later admitted with seizures and an MRI showed further progress of the frontal lesion. He underwent a brain biopsy and the histology showed granulomatous inflammation with occasional fungal hyphae. Fungal cultures was positive with scanty growth of cladophialophora bantiana but unfortunately was sufficient for susceptibility testing.
His therapy was switched to posaconazole given the apparent progress on voriconazole and AmBisome was added as the repeat post-op MRI suggested further increase in the size with inflammatory changes. Ambisome was stopped after 2 weeks and he was maintained on posaconazole. He improved clinically and had no further seizures and a repeat MRI at 3 months showed satisfactory response

Recognition of infections caused by dematiaceous fungi is rising and is increasingly reported but unfortunately the outcomes of therapy remained poor or at least variable. There is a pressing need for more research to better understand the treatment options and strategies.

125: Haemophagocytic lymphohistiocytosis secondary to measles infection in an adult with a hypothesised loss of post-vaccination humoral immunity following rituximab

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Background: Measles incidence has been increasing in the UK with falling vaccination uptake. Haemophagocytic lymphohistiocytosis (HLH) secondary to measles has been rarely reported in children but never in adults. Anti-CD20 therapies such as rituximab are being used increasingly to treat patients with a variety of autoimmune conditions, but their long-term effects on measles immunity remain poorly understood.

Case report: A 45-year-old woman presented with a four-week history of fevers, cough, and a four-day maculopapular rash. She was diagnosed clinically with measles, confirmed on PCR and complicated by HLH as indicated by constant fever, progressive cytopenias and a rising ferritin. Treatment with methylprednisolone led to a full recovery. Historically she had received a full course of the measles, mumps and rubella vaccines with a positive IgG to measles demonstrating immunity. However, subsequent to vaccination, but six years prior to this presentation, she had been successfully treated with a course of rituximab for an auto-immune haemolytic anaemia.

Discussion: This is the first case report of HLH secondary to measles in an adult patient. Furthermore, this individual had been adequately vaccinated. We hypothesise that the rituximab may be implicated in a loss of humoral immunity. It highlights the need for increased vigilance in monitoring vaccine immunity following anti-CD-20 therapies.

147: Clinical and diagnostic challenges of borderline oxacillin-resistant Staphylococcus aureus (BORSA) infections: a case series of BORSA bacteraemia

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Borderline beta-lactam resistance has been observed in Staphylococus aureus isolates lacking the mecA or mecC genes of methicillin-resistant S. aureus (MRSA) and can be characterised by cefoxitin sensitivity in combination with low-level oxacillin resistance. Loosely termed BORSA, such isolates are relatively poorly understood and demonstrate heterogeneity of resistance mechanisms.
Although previously considered not to be clinically significant based on a small number of animal models, there is a sparsity of real-life clinical data, particularly in BORSA blood stream infection (BSI). Given the suboptimal outcomes when treating S. aureus infection with non-beta-lactam antibiotics compared to first line beta-lactam therapy, it is therefore vital that any escalation to the former is well-justified.
We present an illustrative case series of three patients with beta-lactamase hyper-producing BORSA BSI from a single UK centre, each with prolonged culture positivity suggesting a degree of treatment failure on initial beta-lactam antibiotic therapy:

-51 year old man with left elbow septic arthritis and prostatic abscess, Panton-Valentine leukocidin (PVL) toxin positive
-18 year old pregnant woman with Lemierre syndrome, PVL toxin positive
-19 year old man with an ileopsoas abscess, likely acquired via poorly controlled eczema

Further research is needed to better characterise this heterogeneous group of organisms and their associated infections to aid detection and identify optimal treatment strategies for severe BORSA infection.

155: Pasteurella Multocida Associated Prosthetic Vascular Graft Infection Following Cat Scratch: the importance of a good social history.

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Background: Infection of an aortic endograft is a rare but major complication following endovascular repair of an abdominal aortic aneurysm (AAA). Pasteurella multocida (P. multocida), a gram-negative bacillus, is a normal oral commensal of many animals, however it is rarely reported as a cause of vascular graft infection. This case report presents the details of a patient who developed an endovascular stent graft infection by P. multocida following a scratch by his pet cat.
Case: An 88-year-old male presented in 2022 to Manchester Vascular Centre due to a ruptured abdominal aortic aneurysm which was treated with an emergency endovascular aneurysm repair (EVAR) which involved placement of an aortic endograft. 18 months following the EVAR, the patient presented with a community-acquired pneumonia and left lower limb ischaemia. Blood cultures collected grew P. multocida. Upon further social history and examination, the patient was recently scratched by a pet cat. The patient underwent surgery to improve circulation to the left lower limb and was treated with a prolonged course of 6 weeks of IV ceftriaxone. Since the surgery and antibiotic therapy, the patient has not demonstrated any signs or symptoms of ongoing infection.
Conclusion: P. multocida is rarely reported as a cause of prosthetic endograft infections.
This case emphasizes the importance of detailed history taking to identify risk factors for graft infection including animal exposure. Counselling patients about the risks of vascular prosthesis infection in the presence of household pets, with proper education on appropriate management of bites and scratches should be routine.

161: The Big Bang: A case report of a ruptured pulmonary hydatid cyst

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Background
Cystic echinococcosis, caused by the tapeworm Echinococcus granulosus, is rare in the UK, with only seven cases reported 2016-2020. Prevalence is higher in pastoral regions of South America, the Middle East, the eastern Mediterranean, sub-Saharan Africa and western China; vigilance is crucial for returning travellers. Two-thirds of human cases affect the liver, 25% are respiratory, and a small number involve other organs.

Case
A 17-year-old Syrian man presented to General Practice with chest pain, initially attributed to anxiety. A month later, he presented to a district general hospital with cough and fever. Chest radiograph showed a large abnormality, and CT imaging revealed an 8cm x 8cm cystic lesion in the left lung, suggestive of hydatid disease with ruptured daughter cysts and extensive multilobar consolidation in keeping with bronchopneumonia.

The patient was transferred to a tertiary infectious disease centre. A history of sheep farming, a known risk factor, was noted. He rapidly deteriorated, with a systolic blood pressure of 55mmHg, indicating a possible anaphylactoid response or sepsis. Despite the cyst rupture eosinophil count remained normal. He was managed in critical care with broad spectrum antibiotics and inotropes. Echinococcus serology was strongly positive, and hooklets were observed in stool and from resected cyst wall. Treatment included praziquantel, surgical resection, and an extended course of albendazole.

Conclusion
Cystic echinococcosis is rare in the UK, primarily seen in returning travellers. High suspicion and early consultation with infection services is crucial, as eosinophilia is not always present, even in cases of cyst rupture.

180: Lactobacillus Endocarditis in an Adult Patient with Congenital Heart Disease: A Clinical Case Report

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Lactobacilli species are typically part of the human oral, gastrointestinal, and genital flora. Lactobacillus infective endocarditis (LIE) is a rare occurrence.

A 67-year-old patient admitted to the hospital with a six-month history of night sweats, weight loss and fatigue. Patient had history of aortic coarctation corrected with a Dacron patch repair along with a bicuspid aortic valve. Notably, the patient underwent dental extraction a year ago. Four weeks before admission cardiology assessment revealed an aortic regurgitation murmur with normal transthoracic echocardiography. Blood cultures grew Lactobacillus spp. Infective endocarditis was suspected. On admission three sets of blood cultures grew Lactobacillus spp. On examination had splinter haemorrhages in both hands and a diastolic murmur in left sternal edge. Treatment with IV Benzylpenicillin 2.4g 4-hourly and IV Clindamycin 1.2g 6-hourly and oral Rifampicin 600mg 12-hourly was started. Penicillin and Clindamycin MIC was 0.38 µg/mL and 0.032 µg/mL respectively. 18-FDG PET/CT showed mild focal uptake at the aortic valve supporting the endocarditis. On admission day 38 metallic aortic valve replacement was done. Patient recovered well and remained on another 14 days of antimicrobial treatment post-surgery and discharged on admission day 56.

We described a rare instance of LIE in a patient with a history of congenital heart defect who successfully underwent valve replacement surgery. Diagnosis of LIE should be more considered, and appropriate antimicrobial treatment should be promptly introduced given the high mortality rate and recurrence risk.

191: Congenital candidiasis: rare and unpredictable presentations

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Baby one born at 26+1 weeks by emergency Caesarean section due to acute chorioamnionitis weighed 800g. No skin abnormalities were noticed at birth but on day 3 superficial blisters were observed on her back which progressed to large confluent areas of full thickness skin loss.

Candida albicans was isolated from skin swabs, tissue, urine and blood cultures. Prophylactic fluconazole was switched to AmBisome®. Histopathology of a skin biopsy demonstrated inflammatory debris and ulcerated skin. No intact epidermidis was seen. The inflammatory debris comprised of yeast hyphae and spores supported a diagnosis of disseminated candidiasis. Placental histopathology showed acute necrotising chorioamnionitis with significant fetal inflammatory response.

On day 13 care was withdrawn.

Baby two was born at 23+3 weeks by spontaneous breech delivery weighing 500g. Routine cranial ultrasound at 30 weeks showed cystic changes in the white matter and the possibility of fungal infection was raised. Candida albicans was isolated from superficial skin sites and on day 72 intravenous fluconazole was commenced. AmBisome® was added on day 82. A ventricular access device (VAD) was inserted on day 90, and cerebrospinal fluid (CSF) demonstrated persistently raised candida antigen and beta-d-glucan. Candida albicans was isolated from CSF taken on day 95 but all subsequent CSF samples remained negative. Intrathecal Amphotericin B was started on day 131 due to worsening MRI. Day 139 an additional VAD inserted, and bilateral Amphotericin B administered. Baby has since been stepped down to a general paediatric ward, neurological prognosis remains guarded with prematurity and impact of CNS candidiasis.

199: TB or not TB?

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Introduction

Disseminated Tuberculosis (TB) can present a diagnostic challenge; however prompt diagnosis is imperative to avoid treatment delay and poor patient outcomes.

Clinical Case

A 48-year-old male presented with seizures, fever, and confusion on background of diet-controlled Type 2 diabetes only. Born in Sudan, he had lived in the UK for 9 years with no recent travel. On examination he had abdominal ascites and bilateral lymphadenopathy.

Bloods showed normal White Cells, CRP 199. CT Head was normal. CTTAP showed ascites, necrotic lymphadenopathy, mesenteric disease and patchy changes within both lungs - all suggesting possible TB.

Initial treatment was with IV Cefotaxime and Aciclovir to cover for intracranial infection. However, there were no positive microbiological results from blood, sputum, CSF and ascitic cultures. CSF cell counts and biochemistry were normal. Blood-borne virus screen was negative. He continued to have seizures despite anti-epileptic medication, with persistent pyrexia. He deteriorated with reduced level of consciousness requiring intensive care admission. Subsequent MRI Head was suggestive of cerebritis, tuberculoma or lymphoma. Lymph node biopsy was negative for TB PCR and Culture; all antibiotics were stopped.

Histology samples from lymph node biopsy revealed caseating granulomas and were positive for Acid Fast Bacilli. Treatment with anti-tuberculosis medication and steroids was commenced. CSF TB PCR was positive on repeat LP.

Conclusion

This case highlights the crucial role of histopathology and of timely appropriate imaging in TB diagnosis. It emphasises the importance of collaboration between specialty teams and the need for persistence to confirm a diagnosis of TB.

200: Myopericarditis Caused by Meningococcal Septicaemia Complicated by Disseminated Intravascular Coagulation and Multi-Organ Failure in A Young Adult: A Case Report

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Myopericarditis associated with meningitis is underdiagnosed. We describe a case of 19 years-old male who was previously fit and healthy, initially presented with subacute onset of coryzal symptoms, vomiting and diarrhoea, followed by petechial rash and high-grade fever resulting in disseminated intravascular coagulation (DIC) and multi-organ failure (MOF), requiring blood products, inotropic, ventilatory support and renal replacement therapy (RRT) in intensive care unit (ICU). Our patient demonstrated positive Neisseria meningitis group B PCR, rise in troponin up to >50, 000 ng/L with dynamic ST segment changes (ST elevation in V2-V3 followed by global ST elevation) in serial electrocardiograms (ECG) and echocardiogram (ECHO) showing left ventricular systolic function (LVSF) of 40% within 3 days of hospital admission. Our patient was successfully treated with IV ceftriaxone along with supportive measure. It highlights the importance of recognising early, non-specific symptoms in meningitis, myopericarditis as a rare but severe and potential long-term complication of meningococcal septicaemia and timely involvement of multi-disciplinary team (MDT) to deliver optimal care in intensive care environment to improve chance of survival. There is a potential need of careful long-term cardiac monitoring including ECHO and cardiology team follow up if left ventricular systolic dysfunction (LVSD) is involved.

220: A retrospective case series of Mycoplasma pneumoniae infection and review of extrapulmonary complications.

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Background

Mycoplasma pneumoniae is a common cause of pneumonia, with cases typically occurring in epidemic peaks, at approximately 4 - 7-year intervals. In this report we retrospectively collected data from all cases of Mycoplasma pneumoniae between 01st October 2023 and 29th February 2024. Cases were identified from positive Mycoplasma pneumoniae PCR results in children and adults presenting to Manchester University Foundation Trust, UK.

Results

Ninety patients were included in the analysis with a median age of 24 years (IQR 10.8-37.0). Most patients were female (56.7%) with no significant past medical history or immunosuppression (87.8%). The median length of hospital admission was 4 days (IQR 1-8.8). Sixteen patients (17.8%) required admission to ICU with 5 patients ventilated ranging from 9-53 days.
Extrapulmonary disease was common including dermatological complications (13.3%). This included 3 patients with severe mucocutaneous involvement. Four patients developed myopericarditis, eight patients developed hepatitis and three patients had conjunctivitis. Severe neurological complications were observed in five patients including 1 case of GBS, 1 of meningitis, 1 of cerebella ataxia and 1 of necrotizing encephalitis.

Discussion

Mycoplasma pneumoniae is a common respiratory pathogen, predominantly affecting young adults and children. Type 1 respiratory failure necessitating admission to ICU was observed in 17.8% of patients, totaling 126 ICU bed days during the 5-month study period. Clinicians should be aware of diverse extrapulmonary manifestations, which occasionally occur in the absence of respiratory symptoms. In this study, significant sequelae were limited to patients with neurological complications.

234: Severe primary CMV colitis in a young immunocompetent patient

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Background:
Cytomegalovirus (CMV) infection is common in immunocompromised patients but much rarer in immunocompetent individuals. A literature review shows that most cases in immunocompetent individuals are limited to people with inflammatory bowel disease (IBD) and elderly patients who probably have some element of immunosenescence.

Case description:
A 20-year-old lady presented to the hospital with a two-week history of intermittent high fevers, night sweats, headache, sore throat and dry cough. She had developed watery diarrhoea ten days before admission, with ten episodes/day of occasionally bloody diarrhoea, associated cramping abdominal discomfort, and 5kg weight loss. There was no personal or family history of IBD. Physical examination revealed splenomegaly and cervical lymphadenopathy. Blood showed microcytic hypochromic anaemia, transaminitis, mild raised CRP and lymphocytosis with atypical and reactive lymphocytes. The heterophile antibody test was negative. The initial diagnosis was possible glandular fever and iron deficiency anaemia, and she was admitted for supportive treatment.

However, the persistence of fever and diarrhoea warranted flexible sigmoidoscopy, which found atypical colitis. Immunohistochemistry of the distal colonic biopsy was strongly positive for CMVs and, along with positive acute CMV serology and blood CMV viral load, prompted a diagnosis of primary CMV colitis. The patient's symptoms resolved with three weeks of antiviral treatment (Ganciclovir, then Valganciclovir), and extensive immunosuppression screen has remained negative.

Discussion and Conclusion:
Although CMV colitis is more commonly recognised in immunocompromised patients, growing evidence suggests that immunocompetent individuals may also be affected. It is, therefore, worth considering as a differential diagnosis even in immunocompetent patients.

236: E. coli Bloodstream Infection Leading to Prosthetic Mitral Valve Endocarditis in a patient on Long-Term Dialysis

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[1]SVUH

Introduction:
Prosthetic valve endocarditis (PVE) is a serious, life-threatening condition. While Gram-positive bacteria are common pathogens, Gram-negative organisms like E.coli are exceedingly rare causes of PVE. This report discusses a case of recurrent E. coli bloodstream infection (BSI) leading to PVE in a 65-year-old with multiple valve replacements, tricuspid valve repair, and long-term dialysis.

Case :
A 65-year-old male with mitral, aortic, and tricuspid valve replacements on long-term dialysis via a vascath for end-stage renal disease (ESRD), presented with recurrent E. coli BSI over six months. His first BSI was treated with antibiotics without catheter removal. During the second episode, his catheter was replaced, and TTE was negative.
In the third BSI episode, he presented with fever, chills, and weakness. Examination revealed a new mitral systolic murmur. Leukocytes (WBC: 16.8) and CRP (85 mg/L) were elevated. Blood cultures grew E. coli with the same antibiogram as previous. TTE showed a lesion on the prosthetic mitral valve, confirmed by TOE as a large mobile vegetation. Due to his comorbidities, he was not a surgical candidate and was treated with prolonged intravenous cefotaxime and gentamicin. Follow-up blood cultures were sterile, and repeat TOE showed reduced vegetation size.

Discussion:
TOE is crucial for diagnosing PVE due to its superior sensitivity. This case highlights the challenges in diagnosing and treating PVE in comorbid patients and emphasizes the importance of stringent aseptic techniques and vigilant monitoring to prevent severe complications in patients with indwelling catheters and prosthetic valves, especially in the setting of recurrent BSIs.

239: Mycobacterium tuberculosis arthritis and osteomyelitis unmasked by a paradoxical reaction to treatment for tuberculous lymphadenitis.

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A 32-year-old previously well man from Pakistan, who had moved to the UK one year previously, presented with a 3-month history of weight loss, night sweats and general malaise. CT scan revealed an anterior mediastinal mass with adjacent necrotic lymph nodes, and lymphadenopathy within the supraclavicular and iliac regions. Supraclavicular node biopsy demonstrated granulomatous lymphadenitis with caseous necrosis and mycobacteria, which were PCR and culture positive for tuberculosis. HIV testing was negative and vitamin D levels were low. Treatment for fully sensitive tuberculosis and vitamin D replacement was started, but after a few days he developed an effusion in his left knee and increasing pain in his right knee. Fluid aspirated from the left knee was PCR positive for tuberculosis and the effusion resolved following intra-articular corticosteroids. An MRI of his right knee showed marrow oedema and surrounding periostitis within the medial tibial plateau, consistent with early osteomyelitis. Two months into treatment, the left knee swelling recurred and a new mass appeared in the right axilla. Repeat CT showed enlargement of the previous mediastinal mass and new axillary lymphadenopathy. Knee joint MRI showed resolving marrow oedema on the right, but a new effusion with thickened synovium and bony erosions on the left. Treatment with prednisolone for a paradoxical reaction was started and resulted in dramatic improvement of these new symptoms. He completed 9-months treatment for disseminated tuberculosis with complete resolution. This is the first report of a paradoxical reaction to tuberculous lymphadenitis treatment unmasking both osteomyelitis and an acute monoarthritis.

241: Infective endocarditis caused by difficult to treat Lactobacillus paracasei

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Lactobacilli are a rare cause of endocarditis (0.05-0.4%), and generally respond to treatment with penicillin and gentamicin. Only 82 cases have been reported till 2023. There is no guidance on treatment and interpretation of susceptibility.

We describe a unique case of infective endocarditis caused by Lactobacillus paracasei. A 55-year-old male had laryngectomy and gastrostomy in Spain for oropharyngeal cancer. He presented post-operatively with left-sided MCA stroke and fever. Two sets of blood cultures grew Lactobacillus paracasei and a transthoracic echocardiogram (TTE) showed a vegetation on the aortic valve (AV) measuring 10x8 mm. He was treated in Spain with six weeks of Ampicillin and Daptomycin but, remaining generally unwell, returned to the UK for further management.

In the UK, TTE showed the same vegetation and four sets of blood cultures grew Lactobacillus paracasei. The isolates were apparently resistant to Vancomycin, Penicillin and Meropenem but susceptible to Clindamycin and Daptomycin. In view of previous treatment failure, triple therapy of 8 weeks of Daptomycin 12 mg/kg q24h, Piperacillin-Tazobactam 4.5 g q8h and Clindamycin 450 mg q6h was given. Although the patient improved clinically, repeat TTE showed progressive increase in the size of the vegetation to 12x14 mm at the end of 8 weeks. Valve replacement surgery was ultimately carried out. Cultures of the AV tissue were negative but 16S rRNA PCR detected Lactobacillus paracasei. The patient was treated with a further two weeks of same combination of antibiotics following surgery and remains well at third month follow up.

242: Uncommon presentations of Enteric Fever - A case series and lessons learned from Teaching Hospital experience

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Bradford is a culturally diverse City in the UK with approximately 140,000 people of South Asian heritage with a quarter of the total population being of Pakistani origin. Our patients frequent travel to South Asia increases the infection management challenge for health care professionals.

Case description
We would like to present a series of uncommonly diagnosed Salmonella infection who all had negative blood cultures.

Case 1
A 44-year-old female presented with fever and urinary symptoms following a recent return from Pakistan. The patient underwent ultrasound guided drainage for bilateral pyosalpinx, with Salmonella paratyphiA isolated from the aspirate. The patient was initially treated with meropenem and then discharged on azithromycin to complete 4 weeks of treatment. Repeat CT showed ongoing collection, which was drained, and the same organism was again isolated, and she completed further 6 weeks of treatment under close monitoring.

Case 2
A 63-year-old female presented with abdominal pain and underwent elective cholecystectomy a month after returning from Pakistan. The gallbladder aspirate grew Salmonella paratyphiA and the patient was treated with cefotaxime, followed by oral azithromycin.

Case 3
A 28-year-old female suffered a miscarriage at 18 weeks gestational age and approximately 5 months after moving from Pakistan to the UK. Placental and foetal swab cultures isolated Salmonella paratyphiA and she received treatment with meropenem, followed by azithromycin.

All patients made full recovery.

Conclusion
In populations with close links to South Asia presenting with systemic infection consider Salmonellosis in differential diagnosis even when blood cultures are negative.

245: Challenging Management of Mycobacterium Abscessus Bacteremia with Bilateral Breast Abscess in an ESRD Patient, Case Report from Saudi Arabia

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A 41-year-old woman with end-stage renal disease (ESRD) on hemodialysis via a right internal jugular PermCath and a history of cardiomyopathy presented with fever, dyspnea, fatigue, and a productive cough. Blood cultures revealed acid-fast bacilli (AFB), and urine cultures identified Enterobacter cloacae. Antibiotic therapy with meropenem led to fever resolution.

Persistent AFB growth in repeated blood cultures pointed to multi-drug resistant Mycobacterium abscessus, or poor source control likely catheter-related. After catheter removal, she received tigecycline, Bedaquiline, Amikacin, and clofazimine based on sensitivity, yet treatment was disrupted due to toxicities. Later she developed a left-sided breast abscess yielding M. Abscessus after fine needle aspiration and underwent a left simple mastectomy. A subsequent CT scan revealed a right breast abscess.

With Bedaquiline unavailable, therapy shifted to linezolid and imipenem (intermediate sensitivity). A full course of antibiotics was initiated again. Recommendations for bilateral mastectomy to improve prognosis were considered high-risk due to severe cardiomyopathy. Interventional radiology was chosen over surgery.

After 17 months of therapy and a persistent right breast abscess on ultrasound, the medical treatment course was deemed unsuccessful, highlighting the formidable challenge of managing this infection against a backdrop of complex comorbidities.

248: Unraveling Diagnostic Challenges: Multifocal Tuberculosis in an Elderly Multi-morbid Patient – A Case Report from Saudi Arabia

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This case report presents an 80-year-old male with a complex medical history of diabetes mellitus, hypertension, ischemic heart disease, and chronic kidney disease. He was diagnosed with abdominal Tuberculosis following a diagnostic laparotomy for severe abdominal pain and diarrhea. extensive peritoneal deposits were found, and a biopsy demonstrated caseating granulomas. Despite the absence of respiratory symptoms, unremarkable abdominal and chest imaging, and negative Mycobacterium tuberculosis PCR, acid-fast bacilli stain, and culture, he was prescribed first-line anti-TB therapy due to recent close contact exposure to pulmonary TB, but Self-discontinued treatment after one month.

He presented again nine months later with lethargy, weakness, recurrent hypoglycemia, disorientation, cough, and cachexia. Investigations revealed elevated creatinine, bilirubin, liver enzymes, coagulopathy, and Negative HIV. Chest CT demonstrated upper lobe ground-glass opacities and a consolidation invading the right main bronchus. Bronchoscopy confirmed an endobronchial lesion with subtotal obstruction; Initial acid-fast bacilli stains were negative.
At this stage following a multi-disciplinary team decision, Anti-TB treatment was resumed pending a tissue biopsy via endobronchial ultrasound. Subsequently, Mycobacterium tuberculosis (MTB) PCR returned positive from bronchoalveolar lavage, showing rifampicin sensitivity. However, the biopsy was not done due to coagulopathy.
Unfortunately, the patient developed drug-induced hepatitis, necessitating treatment discontinuation. He ultimately succumbed to complications from his disease. This case underscores the complexities in diagnosing and managing TB, in the setting of advanced age and multiple comorbidities. It emphasizes the critical need for prompt and comprehensive diagnostic workup, including rapid molecular testing, and highlights the importance of a multidisciplinary approach to optimize outcomes.

258: A multi-centre case series of severe Fusobacterium species infections in Ireland, 2021-2023

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Background
Fusobacterium species are opportunistic gram-negative anaerobes often implicated in severe multi-systemic infections.

Case descriptions
Case 1: 18-year-old with severe bilateral periorbital cellulitis. Imaging revealed pyogenic sinusitis, necessitating multiple surgeries. Blood and intra-operative samples cultured F. necrophorum; a prolonged course of benzylpenicillin and metronidazole was administered.

Case 2: 17-year-old presented with septic shock following blunt leg trauma. CT revealed a 28cm gas-containing collection and osteomyelitis. F. necrophorum was cultured from blood and intra-operative samples. Treatment was with ceftriaxone and metronidazole.

Case 3: 58-year-old with lung cancer presented with a large empyema. Samples cultured mixed Streptococcus spp., treated with amoxicillin. He relapsed and 16S sequencing detected F. necrophorum and Porphyromonas rDNA. Treatment was changed to co-amoxiclav.

Case 4: 48-year-old presented with a large empyema. F. nucleatum rDNA was detected in pleural fluid. Treatment with cefotaxime and metronidazole were rationalised to co-trimoxazole and metronidazole.

Case 5: 14-year-old presented with abdominal pain and pyrexia following a history of pharygitis. F. necrophorum was cultured from blood. Imaging revealed a 10cm hepatic abscess which was drained. He completed a course of co-amoxiclav.

Case 6: 58-year-old was admitted with quinsy requiring drainage. F. necrophorum was cultured from blood, mixed with Streptococcus constellatus and Gemella bergeri. CT thorax identified a loculated empyema and bilateral septic emboli. A prolonged course of ceftriaxone and metronidazole was administered.

Conclusion
These six cases underscore the diverse presentation and invasiveness of Fusobacterium infections. They highlight the importance of tailored management strategies, including laboratory diagnostics, antimicrobial treatment and source control for Fusobacterium infections.

260: Title: Recurrent Extended Spectrum Beta-Lactamase (ESBL) E.coli Bacteraemia with Corpus Spongiosum Abscesses and Prostate Involvement

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Introduction:

Recurrent bacteraemia involving penile and prostate abscesses is uncommon, lacking specific management guidelines. This poses a challenge for clinicians, necessitating multidisciplinary approaches.

Case Details:

A 47-year-old man with no significant past medical history presented with fevers, tachycardia, and dysuria. He had a normal PSA level (2.49ng/mL), and an ultrasound showed no evidence of pyelonephritis or obstruction. He was treated for a complicated urinary tract infection (UTI) with intravenous Temocillin for three days and oral Co-trimoxazole for seven days total after clinical and biochemical improvement. He presented three weeks later with similar symptoms and perineal/ genital discomfort. Urine cultures were negative, blood cultures grew ESBL E.coli, and a CT showed non-specific perinephric stranding. He received Intravenous Ertapenem for two weeks via OPAT. Symptoms persisted post-completion of treatment, and he was readmitted. Both blood and urine cultures were positive for ESBL E.coli. Following a urology consult, an MRI revealed a small prostate abscess with multiple corpus spongiosum abscesses. He was treated with six weeks of intravenous Ertapenem, with follow-up MRI confirming the resolution of abscesses.

Discussion/ Learning Points:

This case highlights the importance of considering penile and prostate abscesses in persistent UTIs:
- Although corpus spongiosum abscesses are rare, they should be considered in males with penile pain and recurrent UTIs, even with normal examination findings.
- MRI imaging should be considered in recurrent bacteraemia and persistent symptoms.
- Prolonged intravenous antibiotics, potential surgical intervention, and early multidisciplinary involvement are crucial in managing penile and prostatic abscesses with uncommon presentations.

261: Treatment challenges in a case of Disseminated Nocardiosis

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Case: A sixty-year-old man presented with fever, facial weakness, seizures and a palpable mass in his right thigh. He had received a simultaneous pancreas and kidney transplant previously and was on treatment with tacrolimus. He was also on treatment for multiple myeloma. Imaging revealed a frontal lobe ring-enhancing lesion, a 5cm lesion in his right thigh and several necrotic lung lesions of upto 2cm.

Biopsy of the thigh lesion revealed gram positive branching rods, identified as Nocardia farcinica / kroppenstedtii. The MIC to co-trimoxazole was reported as 0.032mg/l. MICs to all other agents tested were >1mg/l. Citing EUCAST, the reference laboratory report suggested that only cotrimoxazole was likely effective.

Cotrimoxazole was commenced, initially in conjunction with meropenem. Treatment was complicated by pancytopenia, rises in serum creatinine and potassium (max 7mmol/l) and significant acidosis, leading to a temporary regimen change to moxifloxacin and linezolid. Despite alarming renal function tests cotrimoxazole was restarted with maximal dose sodium zirconium cyclosilicate and bicarbonate which was given for 3 weeks, before the patient developed widespread maculopapular rash, which necessitated complete cessation of therapy.

Follow-up Imaging after 3 months of interrupted treatment demonstrated complete resolution of thigh and brain abscesses, with significant improvement in lung lesion. He remains well, under regular surveillance.

Conclusion: This case illustrates the challenges of treating nocardiosis, where reliable therapeutic options may be limited to cotrimoxazole. It also shows that it may be possible to overcome some of the predictable renal side effects of this drug with potassium lowering medications and bicarbonate.

278: Acute Hemorrhagic Encephalomyelitis (AHEM) followed by Legionnaire's Disease (LD) from travel to Balkans

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Legionnaire’s disease (LD) is a community acquired atypical pneumonia with several characteristic extra-pulmonary findings. One of the manifestations of LD is neurological compromise. Our literature research showed no reported case of AHEM although ADEM has been reported before.

We present this remarkably interesting case of 66 years old gentleman, previously fit and well who presented with fever, shivering and confusion after a recent holiday to Montenegro and Macedonia region of Balkans. On examination, he was found to have a fever of 40.1 degrees, respiratory rate of 28BPM with saturations of 89% on room air. He ended up in intensive care for high flow oxygen and had intubation and ventilation the next day. CXR confirmed bilateral pneumonia and urinary antigen for legionella came positive and it was confirmed to be serogroup 1 Legionella pneumophila from the reference lab.

He went into multiorgan failure requiring hemodialysis and failure to wake up with sedation hold at day 5 of hospital admission. A CT head showed septic emboli or diffuse axonal injury, but MRI confirmed a diagnosis of AHEM which is a hyperacute variant of acute disseminated encephalomyelitis (ADEM).

He was managed with about two weeks of levofloxacin and 4 days of Rifampicin from the time of diagnosis. AHEM was managed with 3 days of high dose methylprednisolone followed by 5 cycles of plasma exchange.

Encephalopathy is well recognized association of LD. Our presented case and with the literature review we propose to consider ADEM/AHEM as a potential consequence of LD with neurological presentation.

Clinical Microbiology

19: Oral Infection and changes in serum immunofactors in Patients With Alzheimer's Disease

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Background: Alzheimer's disease (AD) is a neurodegenerative disorder characterized by progressive cognitive decline. Recent attention has been drawn to the potential association between oral dysbiosis and AD. However, the precise alterations in oral microbiota in AD patients have yet to be elucidated due to the absence of rigorously controlled clinical trials. This study seeks to investigate the oral microbiota composition and immune response in Chinese individuals diagnosed with AD.
Methods: This was a cross-sectional study. Clinical examinations were performed on all participants. The structural alterations of oral microbiota and inflammatory cytokines of serum were characterized by the 16S ribosomal RNA (rRNA) gene high-throughput sequencing and enzyme linked immunosorbent assay respectively.
Results: 61 patients with AD, and 72 age- and sex-matched cognitively normal people were enrolled. Our data demonstrated a remarkably reduction in the oral bacterial diversity in AD patients. At species level, 15 species, including Capnocytophaga gingivalis, Corynebacterium simulans, Streptococcus agalactiae, Fusobacterium nucleatum, Tannerella forsythia, Prevotella intermedia, Prevotella nigrescens and Treponema spp. including T. denticola, T. medium and T. socranskii showed higher abundance in the AD group ($p<0.05$). Most of the species have been confirmed to be associated with periodontal disease. The concentrations of TNF-α, IL-4, IL-9, MIP-1b and IP-10 increased in AD patients , while those of IL-1ra, IL-7, IL-8, Eotaxin, FGF, G-CSF, MCP-1, MIP-1a, PDGF-bb, RANTES and IFN-γ decreased significantly in AD patients ($P< 0.05$).
Conclusions:Our findings indicated a structural dysbiosis of oral microbiota in individuals with AD, suggesting a potential correlation between periodontal pathogens and Alzheimer's disease.

77: Beta-haemolytic Streptococcal bacteraemias: 2-year review at Bolton NHS Foundation Trust.

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Aim

A retrospective review of all cases of beta-haemolytic streptococcal (BHS) bacteraemias from January 2022 to December 2023.

Methods

Electronic patient records (EPR) and LIMS were used to collate data for patients with Group A, B, C and G streptococcal bacteraemias including adult and paediatric patients. This included initial working diagnosis, spectrum of infections (superficial/deep), focussing on type and duration of antimicrobial therapy.

Results

Of the 81 cases of BHS bacteraemias, groups A and G were predominant (33% each). There were 20 group B bacteraemias (6/20 paediatrics) and 7/81 were group C.
Uncomplicated skin/soft tissue infections were identified in 60% of patients. The average duration of total (IV and oral) antibiotics was 14.4 days.
Twenty-six bacteraemias were treated as complex infections with a deep focus of infection. Of these, 23% were endovascular infections including endocarditis, 15% were bone and joint infections and this subgroup of patients received IV antibiotics for 4-7 weeks.
All paediatric patients with group B streptococcal bacteraemias received a total of at-least 10 days of antimicrobial therapy with beta-lactams.
Flucloxacillin was the most commonly prescribed antibiotic (49%) for all cases and 7% of patients were allergic to penicillin.

Conclusions

The optimum duration of antibiotics for BHS bacteraemias is determined by the source of infection. In our study, clinical assessment and relevant investigations were performed for all patients to exclude deep foci of infection. This guided timely oral stepdown, appropriate duration and use of narrow-spectrum, targeted antimicrobial therapy to support good antimicrobial stewardship across our organisation.

110: A life-changing 4 hours: A Northumbria Healthcare Trust Initiative

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In March 2023, NHS England initiated a mandate to standardise blood culture sampling and analysis, aiming to improve sepsis outcomes and bolster antimicrobial stewardship. In response, Northumbria Healthcare Trust (NHCT) established a multidisciplinary team comprising medical microbiologists, biomedical scientists, infection prevention and control specialist nurses, and frontline clinical teams. We implemented a standardised blood culture pathway across the trust from March 2024.

Objectives:
The initiative focused on three primary goals: collecting two sets of blood cultures in patients with suspected sepsis, achieving appropriate bottle fill rates, and keeping needle-to-laboratory time within 4 hours.

Methods:
New blood culture packs were created with additional information, clinicians were made aware of the new laboratory changes through weekly trustwide newsletters, and all clinical and laboratory staff were encouraged to complete a new e-learning package. Fortnightly MDT meetings began to review audit data, address issues, and share successful practices.

Results:
The initial rollout targeted high-sampling areas, beginning with Critical Care, followed by the Acute Medicine Directorate. Critical Care achieved a mean fill rate of 8ml per bottle in March 2024. On average, 94% of blood cultures are loaded onto the incubator within 4 hours throughout the trust.

The project necessitated significant financial investment. The total first-year cost for laboratory analysis was estimated at £475,935, covering 24/7 laboratory operations and consumables for over 26,000 blood cultures. Further expenses included staff training, communication, and audit activities.

This comprehensive approach outlines NHCT's commitment to improving patient care and supports the goals of NHS England's blood culture mandate.

138: A “Dart in the ear” a very rare cause of otitis media

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Title

A “Dart in the ear” a very rare cause of otitis media

Raja NS, Ahmed J

Background/Case(s) description/Discussion

Background

Vibrio cholerae (V. cholerae), motile (darting motility), ubiquitous gram-negative-bacilli thrives in coastal and fresh waters. V. cholerae serotypes non-O1 and non-O139 are linked with extraintestinal infections. Ear infections are rare, we report a case of otitis media in an English patient with no foreign travel caused by non-O1, non-O139 V. cholerae.

Case report

A 23-year-old male was seen by general practitioner (GP) with symptoms of earache. Examination showed no discharge, redness, or swelling, and no fevers. GP prescribed a 5-day of amoxicillin. . He returned to his GP after 2-months with worsening of ear symptoms. The ear was full of pus, which was sent for culture and sensitivity. It grew Pseudomonas stutzeri and V. cholerae. V. cholerae was confirmed as non-toxigenic non-O1, non O139 by the reference laboratory. Further history revealed that he swam in local swimming pool one week prior to the onset of symptoms. He was prescribed ciprofloxacin ear drops to which he fully recovered.

Discussion

This patient was an immunocompetent with no past history of ear infections prior to the swimming. There was no diarrhoea or contact with anyone with diarrhoea and did not travel abroad. It is thought that he acquired this organism from swimming pool water. This case report highlights the need for awareness of the possibility of extraintestinal infections, such as ear infections due to V. cholerae.

157: A 13-year Review of Brain Abscesses at a Tertiary Neurosurgical Centre

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Objectives:
This retrospective study describes the epidemiology, microbiology, and outcomes of patients with brain abscesses in one of two Irish adult neurosurgical centres.

Methods:
Cases were identified using the hospital coding system for intracranial abscess or granuloma as primary diagnosis 2010-2022. Data were extracted from the laboratory information management system.

Results:
Sixty-three patients were identified; 57% (36/63) were male, the median age was 48 (range 1-96). Most infections were community acquired (54/63; 85%); an associated dental or ENT infection was identified in 50% (32/63). 12% (n=8) had prior neurosurgical procedures and 11% (n=7) were immunosuppressed. Imaging demonstrated a single lesion in 79% (50/63); 48% (24/50) were located in the frontal lobe. 30-day all-cause mortality was 6% (4/63).

Causative pathogens were identified by culture in 74% (47/63). Cultures were monomicrobial in 72% (34/47), 27% (13/47) were polymicrobial. Streptococcus anginosus group was cultured from 57% (27/47) of positive samples, of which Streptococcus intermedius was the most common species (n=14), anaerobes were recovered from 30% (14/47), and aerobic gram-negative organisms from 13% (13/47). Candida albicans was the only fungal pathogen identified and was from an immunocompromised patient. Six culture negative samples were sent for 16S PCR, organisms were detected in three.

Conclusions:
Most abscesses were community acquired, and often associated with ENT or dental infections, subsequently, observed antimicrobial resistance was very low. Healthcare associated brain abscesses had a higher proportion of Staphylococcus aureus (n=2), and culture negative specimens (n=2). This demonstrates the need for special diagnostic and empiric antimicrobial considerations in this group.

162: Aerococcus bacteraemia: 8 years retrospective study in South Essex Hospitals

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Introduction

Aerococcus have often been misidentified as Streptococcus or dismissed as contaminant, however an increased awareness of Aerococcus, plus new diagnostic methods have led to the increased isolation of Aerococcus from clinical samples. Aerococcus can cause invasive infections such as urosepsis, and endocarditis in elderly patients with renal pathology.

Material and methods

We conducted a retrospective study on all patients with Aerococcus bacteraemia from April 2016 to October 2023. Demographic and laboratory data were collected on microbiologically proven Aerococcus bacteraemia cases.

Results

A total of 51 Aerococcus bacteraemia cases were recorded involving 37 males. The distribution of Aerococcus species was as follows: Aerococcus urinae in 27 cases (53%), Aerococcus viridans in 19 cases (37%), Aerococcus sanguinicola in 4 cases (8%), and Aerococcus species in one case (2%). The three most frequent clinical presentations were confusion (27 cases, 53%), fever (24 cases, 47%), and breathlessness (11 cases, 22%). Notably, 34 of the 51 patients had abnormalities related to the urinary tract system, making this as the most common source of bacteremia. Echocardiography confirmed infective endocarditis in 4 cases.

The most commonly used antibiotics in this series were co-amoxiclav and amoxicillin, administered in 28 cases (56%). Appropriate antibiotics were prescribed in 23 patients. Additionally, seven (14%) Aerococcus isolates were resistant to penicillin.

Conclusion

Aerococcus are emerging pathogens because of better diagnostic technology, increased awareness and an ageing population with underlying urologic conditions. The physicians should be aware of this pathogen, its complications particularly endocarditis and not ignore them as contaminant.

188: Can umbilical Cord Blood Improve Detection of Early Onset Sepsis in Preterm Neonates <34 weeks Gestation

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Neonatal sepsis is a systemic infection in infants <28 days old, with Early-onset sepsis (EOS) occurring within 72 hours of life. The gold standard for EOS detection is a peripheral blood culture (PBC), but its sensitivity is questioned. Umbilical cord blood has the potential to be used for EOS detection; a 1ml fill volume can easily be obtained without risking anaemia to the neonate.

Methodology: Cord blood was collected aseptically from the placenta and inoculated into paediatric and anaerobic blood culture bottles, as well as a serum tube for biomarker testing.
Findings: Out of 21 cases, EOS caused by E. coli was identified in one case, detected in both UCBC and PBC, with UCBC demonstrating a faster time to detection. UCBC sensitivity was 100% and specificity 55%. A high contamination rate of 48% was seen, which varied significantly between sample collectors. ward-collected samples having a contamination rate of 91% compared to laboratory-collected samples at 0%. Biomarker analysis revealed that PCT and IL-6 had sensitivities of 100%, with PCT and IL-6 specificity of 93.75% and 56.25% respectively. Both biomarkers had a NPV of 100%

Conclusion: UCBC had Improved TTD compared to PBC for EOS detection. Limited sample size and low positivity rate presented challenges in evaluating diagnostic test accuracy. Weaknesses in training were identified, to address the issue, a core team for sample collection will be established. PCT emerged as a more reliable indicator for ruling out EOS in preterm neonates compared to IL-6.

213: The factors responsible for 30-day survival following Pseudomonas bacteremia in a tertiary care NHS Trust United Kingdom from 2013-2021

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Retrospective study conducted at Royal Stoke University Hospital retrieving data for 9-year period with Pseudomonas bacteremia. Patient-notes for calendar year 2021 were analysed. CC-comorbidity index (CC-I) and PITTS bacteremic severity index (PBS) were employed and the relationship with timely introduction of empiric anti-pseudomonal antimicrobials and 30-day survival was assessed. Total number of positive blood cultures was 20419. PB was detected in 591(2.89%). Of them, 95.1% was P. aeruginosa. The average age was 68.9 ± 15.4 years. Male:female ratio was 2:1. In 246 patients, (41.6%, $p<0.05$), focus of infection could not be established. Genito-urinary infections and central venous line sepsis were the source for 130 (21.9%), & 72 (12.1%) respectively. Areas of highest yield of PB were Emergency Department [206 (34.8%), $p<0.05$], Respiratory 76 (12.8%) and Oncology 62 (10.4%). During 2013-2021, prevalence of Pseudomonas bacteremia was rising but the 14- and 30-day mortality showed a decline. High PITTS bacteremic severity index ($\chi2=37.9$, $p<0.05$) and initiation of empiric anti-pseudomonal antibiotics after 24 hours following the blood culture ($\chi2=5.1$, $p<0.05$) independently affected the 30-day mortality. Having comorbidities significantly impacted on 30- day mortality [CC-I 2.1±0.2, among 30-day-survivors vs 6.3±0.3 on non-survivors, ($p<0.05$)]. The initiation of anti-pseudomonal antibiotics within 24 hrs following flagged positive blood culture significantly contributed to 30-day survival ($\chi2=5.28$, $p<0.05$). A slow-rising trend of ciprofloxacin, imipenem, and meropenem resistance was observed among Pseudomonas isolates over the period.

232: Potentially POSITIVE? Assessing the POSITIVE score for identifying infective endocarditis in patients with Staphylococcus aureus bacteraemia, and its potential role as a decision aid to streamline echocardiography

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Introduction
Infective endocarditis (IE) complicates 13-25% of Staphylococcus aureus bacteraemia (SAB) cases. Early diagnosis improves survival, recommended in European Society of Cardiology 2023 guidelines via echocardiogram. The POSITIVE score aims to identify patients with SAB at highest risk of developing IE.
We carried out a service evaluation of patients with SAB to validate POSITIVE score and assess its potential as a decision aid to prioritise patients for echocardiography.

Methods
We retrospectively identified adult inpatients at the Royal Free or Barnet hospitals with SAB from August 2022 - August 2023. POSITIVE score included: time-to-positive blood culture, previous intravenous drug use , embolic events and pre-existing heart conditions. POSITIVE score, transthoracic echocardiogram (TTE) and transoesophageal echocardiogram (TOE) investigations were identified using electronic patient records.

Results
IE was diagnosed in 8.5%(14/163) of patients. TTE identified 57%(8/14) of IE cases, and TOE identified 43%(6/14), where TTE was negative or inconclusive. The POSITIVE score demonstrated 78.6%(11/14) sensitivity and 95.9%(70/73) negative predictive value (NPV).
TTE was performed in 84.7% of patients with SAB. TTEs were inconclusive in 26.1%(6/138). TOE was requested in 17.7%(20/113) of patients where TOE was indicated.

Discussion
The high NPV of POSITIVE for patients with SAB and IE provides scope to rationalise TTE referral, including deferred TTE in very low-risk patients. POSITIVE score could help identify high-risk patients early, to prioritise for TOE. Our next audit stage will pilot a Microbiology-initiated risk assessment of IE in SAB via POSITIVE, prioritising TTE and TOE requests upon SAB diagnosis, based on estimated risk of IE.

249: Evaluation of respiratory multiplex panel performance at a large teaching hospital in the United Kingdom

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Background
The Luminex® NxTAG® Respiratory Pathogen Panel (referred to as the Luminex® assay) is designed to simultaneously detect and identify nucleic acids from 21 respiratory pathogens.
Methods
All Luminex® assays received in the Cambridge Clinical Microbiology and Public Health Laboratory (CMPHL) from January 1st 2022 to December 31st, 2023, inclusive were extracted from the electronic medical records database (Epic Systems) using the Qlinkview tool. Data were manipulated and visualised using the R programming language with tidyverse packages.
Results
There was increase in tests performed in 2023 compared with 2022 (18,339 samples from 15,859 unique patients in 2022; compared to 24,613 samples from 20,510 unique patients in 2023). Trends in positivity rates for respiratory viruses reflected national trends, with peaks mainly driven by influenza A virus around spring and a large peak in winter 2022. The proportion of positives for bacterial atypical pneumonia targets was extremely low for most of 2022-2023, around 1 per 500 samples. However, from November 2023 a dramatic rise in Mycoplasma pneumoniae cases was observed. There were below 5 M. pneumoniae cases in 2022 compared to 82 cases in November and December 2023. A high proportion of the positive legionella cases were deemed spurious; as suspected cases were negative on specific testing.
Conclusions
In conclusion, we found that the Luminex® assay is likely a reasonable diagnostic for detecting viral pathogens from the upper respiratory tract. Large peaks in influenza A and M. pneumoniae corresponded with national trends. Legionella results from nasopharyngeal swabs should be interpreted with caution.

250: A Retrospective Review of Shiga Toxin Producing Escherichia coli Infections and stx Gene Detection in Liverpool University Hospitals NHS Foundation Trust

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Introduction
Shiga Toxin-producing Escherichia coli (STEC) infections present as a spectrum of disease and can be associated with considerable morbidity and mortality, especially when due to O157 isolates. There is increasing concern regarding outbreaks and severe symptoms associated with non-O157 strains. EntericBio PCR was introduced in our large teaching hospital laboratory in 2022, facilitating gastrointestinal pathogen detection including O157 and non-O157 STEC. Previous culture-based laboratory methods only detected non-sorbitol fermenting (NSF) and O157-serogroup E. coli.

Objectives
This study aimed to explore the local incidence and clinical impact of STEC-positive results following PCR testing introduction, particularly in patients within hospital settings.

Methods
Sample data from June-December 2022 was retrieved from the laboratory information management system. Clinical information from the hospital patient management system was retrospectively reviewed to correlate laboratory data with clinical data and outcomes.

Results
59 patients had stx1/stx2 detected in stool during the study period, compared to 10 NSF E. coli isolates identified from specimens during the same period in 2021 before PCR introduction. 28/59 STEC-positive stools were obtained from hospital patients.
34 isolates were confirmed with 19 different serotypes identified, the most common being O157:H7 (n=7, n=6 from hospital patients). Other notable serotypes included O26:H11 (n=4), O146:H21 (n=2) and O103:H2 (n=2). The most common stx subtype was stx1a (n=13).

Discussion
Non-O157 STEC are increasingly recognised as a cause of significant gastrointestinal infection with risk of haemolytic uraemic syndrome. Introduction of faecal PCR has considerably increased STEC detection within our community, supporting patient management and notification to UKHSA.

256: Actinotignum sanguinis: an emerging pathogen

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Background:
In 2015 a reclassification of several species belonging to Actinobaculum created a novel genus, Actinotignum. There are three species in this genus, including Actinotignum sanguinis. It is a small facultative anaerobic Gram-positive rod that grows slowly and preferably under anaerobic or CO2 conditions. It is part of normal urogenital flora and associated with urinary tract infections. It is probably an underdiagnosed pathogen as laboratories do not use blood agar plates or anaerobic conditions for urine cultures, which favour its growth.

Case presentation:
A 59-year-old man presented to hospital after a collapse, and a few-day history of high fevers and drenching sweats. His past medical history included Type-2 diabetes and previous complicated right-sided pyelonephritis with a JJ stent in-situ. His infection markers were significantly elevated, he had an acute kidney injury and CTKUB showed right sided pyelonephritis and a liver abscess.
The liver abscess was drained and a nephrostomy was inserted. A blood culture and pus from the liver abscess both grew Actinotignum sanguinis. His stent was removed, and he was treated with piperacillin-tazobactam and clindamycin intravenously. He responded to treatment and he was discharged with oral amoxicillin to complete a three-month course.

Conclusion:
Awareness of this pathogen is important as it can cause disseminated infection, and, it is resistant to co-trimoxazole and ciprofloxacin, antibiotics that are often used empirically in the treatment of UTIs. Maldi-TOF has increased the identification of bacteria to a species level; our case demonstrates that the presence of Actinotignum sanguinis should not be ignored.

Collaboration and networks

56: Hepatitis B: the hidden epidemic and a virtual solution

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Hepatitis B virus (HBV) is a leading cause of infection related mortality and morbidity, and UK efforts to reduce HBV mortality have introduced Emergency Departments opt-out testing programme for bloodborne viruses (BBV) in high prevalence areas. However, following the implementation of this BBV screening programme in our Trust in May 2022 the pace of new Chronic Hepatitis B diagnoses was quickly recognised to exceed our existing service capacity of consultant-led HBV Clinics; between May 2022 - June 2023 333 new HBV diagnosis were identified averaging 25 new patients per month requiring lifelong follow up, and leading to an average waiting time of more than 6 months for a first appointment in HBV clinic.

To address this, we introduced a novel Nurse-Led Virtual Clinic (VC) model – to our knowledge, a UK first. Following a face-to-face onboarding initial appointment with Specialist Nurses, suitable stable patients controlled on antiviral treatment or in an inactive (immune-control) phase are enrolled onto the bespoke smartphone app. Outpatient attendances for monitoring blood tests and collection of antiviral prescriptions are scheduled on the app in a more flexible manner than traditional appointments, and patients are readily able to contact the Specialist Nurses for support. A weekly MDT and clear criteria for referral back to Consultant-led clinics ensure safe and responsive care of these patients. Between 02/2023 - 02/2024 125 patients were referred to the Virtual Clinic contributing to a reduction in waiting times to under 3 months, reduced non-attendance rates, and greater patient autonomy and satisfaction.

114: A collaborative approach in developing and identifying supporting resources for the AMS/AMR undergraduate pharmacy curriculum and hosting resources for educators and students on BSAC Keep Antibiotics Working platform.

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Background

The British Society of Antimicrobial Chemotherapy Keep Antibiotics Working (BSAC KAW) website provides educational resources for trainees and educators and seeks to ensure education on antimicrobial resistance is mandatory within undergraduate curricula for healthcare professionals, including medics, nurses, pharmacists and dentists.

In 2022, a national antimicrobial pharmacy education group (NAPEG) was formed, including academics from the four UK nations and pharmacy practitioners with expertise in antimicrobial stewardship (AMS), NHSE, UKHSA, BSAC KAW, student pharmacists (BPSA) and the professional pharmacy body (RPS).

Activity

NAPEG collaborated with NHSE to develop a competency framework on AMS and AMR for the initial training and education of pharmacists (IETP) and developed practice-based assessment activities for placements.

Outputs:

The framework comprises 6 domains: Infection prevention and control, antimicrobials and antimicrobial resistance, antimicrobial prescribing and stewardship, vaccine uptake, person-centred care and interprofessional collaborative practice.

Each domain includes a competency statement and descriptors that were mapped to the GPhC standards for IETP and RPS Prescribing Competencies to develop an indicative AMS/AMR curriculum. (Indicative Curricula for the MPharm and Foundation Training Year | NHS England | Workforce, training and education (hee.nhs.uk)). The AMS/AMR curriculum is timely since in 2026 pharmacists will be independent prescribers at the point of registration.

BSAC KAW team have worked collaboratively with NAPEG to identify learning resources for pharmacy educators and students and align them to the six domains. (KAW Resources – Keep Antimicrobials Working Forum & Resources (bsac-kaw.co.uk)). This enables visitors to search resources by curriculum domain supporting curriculum implementation.

115: Collaboration in the East of England region on the development of duration evidence bundles for infections commonly managed in secondary care.

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Background
The national medicines optimisation opportunities (NMOOs) have highlighted improving appropriate duration of antibiotics as an antimicrobial stewardship (AMS) strategy in primary care. Evidence bundles and associated resources highlighting multiple benefits have helped implement this strategy and has led to improved knowledge and duration compliance within primary care.
In the East of England (EOE), a stakeholder survey chose to prioritise a duration strategy targeting secondary care to improve AMS. A multidisciplinary, cross-sector, region-wide working group was assembled to produce evidence bundles for course durations in infections seen in secondary care reducing the need for unnecessary antibiotics.
Method
An extensive literature search using pubmed and university library services was carried out looking at "duration of treatment" on agreed indications: Gram-negative bacteraemia, community and hospital acquired pneumonia, osteomyelitis, chorioamnionitis and diabetic foot infection. Papers are summarised in a PICO (Population, Intervention, Comparison, Outcome) format and presented in evidence bundles with key themes highlighted.
Results
Bundles are reviewed and shared with individual trusts to take to their clinical teams for consideration of implementation in their service. The bundles are distributed (1) regionally via AMS meetings and communications to encourage evidence-based best practice; (2) nationally via the regional AMS NHSE leads and shared with other stakeholders including UKHSA. This poster demonstrates an example of a bundle.
Conclusion
The collaboration within the region has resulted in improved learning and knowledge mobilisation on duration within trusts in the region.

Decontamination

82: Pre-cleaning of endoscopes - is this a sufficient method when reprocessing cannot take place immediately after use?

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Background
At Odense University Hospital (OUH), endoscopies are performed in several departments, and reprocessing is performed immediately after use in close proximity to the endoscopic unit. However, centralization of reprocessing at the hospital are planned, whereby most endoscopes will have a significantly longer transportation time to the reprocessing room. Longer transportation time with drying of liquids/secretions increases the risk of a reduced degree of contamination after reprocessing. This risk may be counteracted by using pre-cleaning, but studies are lacking.

Aim
To investigate the impact of pre-cleaning on the degree of contamination after reprocessing endoscopes.

Methods
Pre-cleaning consisted of enzyme-soap flush through all channels immediately after use of the endoscopes (PC1) and for some followed by enzyme-soap-bath for ten minutes (PC2).
Pre-cleaning was used on a selection of endoscopes with different timespan to reprocessing and was performed from mid-2021 to mid-June 2024 at OUH, Denmark.
Microbiological samples were collected from all channels of the endoscopes after standard reprocessing. Sampling and culturing were performed according to the National Infection Prevention and Control Guidelines (NIR).

Results
A total of 155 endoscopes were included; 71 processed with PC1 and 84 with PC2.
From thirteen (8.4%) of the endoscopes, growth was detected from one or more channels. Only four of these (2.6%) exceeded the acceptance level of < 5 CFU/0.2ml. Thus 97.4% of endoscopes were accepted as clean.

Conclusions
Pre-cleaning seems a promising method to reduce risk of bacterial growth in situations where endoscopes cannot be reprocessed immediately after use, but more data are needed.

144: Microbiological quality control of flexible endoscopes after storage in vacuum conditions

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Background
Reprocessing and subsequent storage and transportation of flexible endoscopes are logistically challenging. At Odense University Hospital, Denmark, flexible endoscopes are reprocessed and stored in drying cabinets in close proximity to the endoscopic units. In planning for a centralization of the reprocessing of all endoscopes at the hospital, an alternative storage method was needed.

Objective
To assess whether microbiological quality control standards are met when endoscopes are stored under vacuum conditions.

Methods
Following standard reprocessing and drying for at least three hours in drying cabinets, flexible endoscopes were subjected to vacuum packaging (Vac-a-Scope System, Getinge) and stored for a variable time. Prior to clinical use, water samples were collected from all channels of the endoscopes and cultured according to national standard protocols as described in the Danish guideline for reprocessing of flexible endoscopes.

Results
From ultimo September 2022 until mid-June 2024, 460 endoscopes (218 gastroscopes, 130 endoscopic ultrasound (EUS) scopes, and 112 colonoscopes) were stored in vacuum conditions for a period ranging from a few hours to more than 15 days before microbiological sampling. Growth above accepted threshold of ≥5 CFU/0.2 ml was detected in samples from nine endoscopes (2 %). This met the microbiological quality standards.

Conclusions
Use of vacuum for packaging, storage and transportation of disinfected and dry flexible endoscopes is a promising method to facilitate logistics of reprocessing and to maintain microbiological cleanliness of endoscopes.

230: Bringing Balance to the Formulation: Disinfection Efficacy and Material Compatibility

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Objectives
To highlight the importance of environmental decontamination formulations and the impacts of ingredients beyond the primary biocide.

Methods
A series of example disinfectant formulations containing quaternary ammonium compound (QACs) and a variety of co-formulants were tested for their antimicrobial efficacy and compatibility with plastics.
Antimicrobial efficacy testing was performed in accordance with EN 14885 guidance.
Plastic compatibility testing was performed in accordance with BS EN ISO 22088-3.

Results
The simple QAC-only formulation displayed limited antimicrobial efficacy considering spectrum of efficacy and contact times but good compatibility with plastics. Several co-formulants with different structures were added to the QAC solution. These showed varying impacts on both antimicrobial efficacy and plastic compatibility with many displaying opposing influences.

Discussion
Exhibiting good antimicrobial efficacy is a necessity of a formulation used for environmental decontamination. It is desirable for this formulation to also have good compatibility with plastics to give confidence that plastics in the environment will not be damaged.

Ingredients other than the primary biocide will impact both the antimicrobial efficacy and compatibility with materials, however this might not be observed without thorough testing.

Conclusions
The formulation of environmental decontamination products plays a crucial role in their performance. These products should always consider the balance between strong antimicrobial efficacy and the risk of material compatibility issues. Formulation ingredients can enhance or detract against these goals, so understanding and evidencing these factors is essential for choosing the right solution.

235: Chlorine in cleaning - are we concentrating enough?

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INTRODUCTION
Effective environmental hygiene is widely acknowledged to reduce healthcare-associated infections. The current National Infection Prevention and Control Manual recommends use of chlorine at 1,000 parts per million (ppm) for routine use on sanitary fittings, as well as enhanced environmental decontamination. The purpose of this study is to determine if Chlorine preparations found in ward clinical areas contain the desired 1,000ppm concentration.

METHODS
Twenty-eight samples of Chlorine solution were collected from 7 clinical areas. The date, time of preparation and role of staff member who prepared each sample (domestic staff/nurses) were documented. Two samples were collected for each staff group and ward, on different days. The samples were analysed using a chlorine handheld colorimeter and recorded. Unstructured interviews with staff were conducted to ascertain the human factors in Chlorine make-up.

RESULTS
The chlorine concentration in the solutions collected ranged from 40-3,720ppm with 68% below 1,000ppm, 25% above 1,000ppm and 7% within 1000ppm. The mean sub-optimal chlorine concentration level was 575ppm, well below the desired target. Analysis of the data highlighted that chlorine solution is made to a concentration 1000ppm only 32% of the time, with corresponding human factors observed including user comfort, staff respiratory health, time management, resource, and training issues.

CONCLUSION
Our analysis showed that 7% of chlorine solutions collected were at the correct concentration of 1000ppm. Use of incorrect chlorine concentrations in cleaning has ramifications for environmental decontamination and staff respiratory health. Future steps will be to introduce tailored nurse training and exploration of alternative innovative cleaning products.

Diagnostics

31: Impact of Rapid Identification of Blood Culture Isolates

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Introduction

The Sepsityper® kit (Bruker Daltonics GmBH & Co. KG) enables rapid organism identification in less than 30 minutes direct from a positive blood culture bottle, compared with traditional methods where identification in made following a minimum of 18 hours incubation. Liverpool Clinical Laboratories have been using the Sepsityper® since November 2022. This service evaluation assessed the accuracy and clinical impact of this new methodology.

Methods

Data was collected from laboratory and electronic patient's records. Patients were selected in sequence (every tenth patient) from a list of all the positive blood cultures from 1/1/23 to 21/3/23 for groups of common blood culture results (E.coli, S.aureus, P.aeruginosa etc).

Results

Data was collected for 71 blood culture results; 35 gram positive bacteria, 26 gram negative bacteria and 5 yeasts. Sepsityper® provided an accurate preliminary result in 58 cases (82%). On average for those cases with an accurate result, it provided an ID 14 hours, 47 minutes earlier than a full culture. This resulted in a change in antimicrobial use in 15 cases and earlier adjunctive management advice provided in 12 cases.

Discussion

These results demonstrate that Sepsityper® is a valuable addition to our diagnostic service. It is particularly useful for gram negative species expected to have constitutive AmpC production, where the Sepsityper® prompted antibiotic change in 6/10 cases; 17 hours before identification and sensitivities via full culture were available. It is much less useful in identifying yeasts and alpha haemolytic streptococci (2 cases accurately identified/5 for both) – which are known limitations.

34: The use of Scattered Light Integrating Collector technology for rapid blood culture sensitivity testing

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Introduction
Sepsis rates are increasing, with Gram-negative organisms representing a large proportion of blood stream infections. Rapid antibiotic administration alongside diagnostic investigations is required for effective management of these patients. Current diagnostics take approximately 48 hours for a final report therefore rapid diagnostics are required. This study investigates a novel antibiotic sensitivity method, the Scattered Light Integrating Collector (SLIC), combined with a rapid identification method using MALDI-TOF technology to determine if an accurate identification and susceptibility result can be provided within four hours of a positive blood culture being reported.
Method
Forty-seven blood cultures from 46 patients containing Gram-negative bacteria were processed using the MALDI-TOF Biotyper Sepsityper for identification directly from the blood, and the SLIC instrument for susceptibility testing. All organisms were also tested using the current standard workflow used in the host laboratory. Categorical agreement (CA), major errors (MaE) and very major errors (VME) were determined.
Results
SLIC produced susceptibility results with a 71.9% CA, 30.6% MaE and 17.5% VME. Median difference in time to final result was 44.14 (43:05-45:15) hours earlier compared to the current method.
Conclusion
SLIC was unable to consistently provide sufficiently accurate antibiotic susceptibility results compared to the current standard method.

67: Evaluation of cerebrospinal fluid (CSF) white blood cell (WBC) count criteria for use of the BioFire® FilmArray® Meningitis/Encephalitis Panel

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Background
Central nervous system infections can be caused by different pathogens. BioFire® FilmArray® is important mainly in culture negative cases to confirm or exclude infection because it identifies genetic material of pathogens. Being an expensive test, it is necessary to select the CSF samples which need FilmArray.

Objective
Our objective was to evaluate the use of WBC criteria in CSF to indicate FilmArray testing.

Method
CSF FilmArray results were analysed with WBC in CSF from samples received in Microbiology laboratory, Royal Stoke University Hospital from 13/09/2021 to 23/09/2022

Results
Out of the 251 CSF samples which had WBC of ≤10, 236 (94%) were negative and 15, (6%) were positive for FilmArray. Of those 15 patients, 8 had positive Enterovirus results and all were children less than 5 years. Of the three patients with positive Streptococcus pneumoniae result, two were neonates and the other was a 19 year old and clinical data was unavailable. Patient with Streptococcus agalactiae positive result also had pressure sores and swabs also had grown S.agalactiae and hence the CSF result was of doubtful clinical significance. Three other patients who had Varicella zoster, Herpes simplex 1 and Herpes simplex 6 respectively were immunocompromised.

Discussion
Excluding one S.pneumoniae FilmArray positive result for which the clinical data was unavailable, other positive results with CSF WBC of ≤10 were belonged to children or immune-compromised patients. Therefore, WBC count in CSF can be safely used to exclude the samples from FilmArray testing in non-immunocompromised adult patients.

99: Impact of Pneumococcal Antigen Testing on Antibiotic Management and Patient Outcomes in Community-Acquired Pneumonia

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Background
S. pneumoniae is the leading cause of severe community acquired pneumonia (CAP) in the UK. In such cases, the British Thoracic Society recommends using empirical broad-spectrum antibiotics including atypical pneumonia cover and pneumococcal urinary antigen tests.

Locally, high-level penicillin resistance in S. pneumoniae isolates remain low and therefore rapid identification would allow prompt de-escalation of empirical antibiotics in non-meningitis infections.

Methods
We conducted a retrospective review of BinaxNOW pneumococcal urinary antigen requests between 1.10.2021 to 1.9.2023. The findings were correlated with culture results, impact on length of stay, antimicrobial usage and cost-effectiveness

Results
One-hundred and twenty-nine (6.70%) of 1924 tests performed were positive. Antibiotics were de-escalated in 83 (64.3%) of these cases or 4.31% of all requests. The primary reason for maintaining current management was penicillin allergy or alternative antibiotic use. Patients with a positive pneumococcal antigen test were admitted for an average of 14.3 days compared with 11.4 days for those testing negative. This difference was not statistically significant. With an approximate cost of £22.43 per test, the cost per positive test was £334.47.

Conclusion
Pneumococcal antigen testing is a valuable adjunct for diagnosing pneumococcal infection. In settings with low rates of penicillin resistance, early identification of S. pneumonia allows for safe and rapid de-escalation in non-meningitis setting. While this has the potential to positively impact patient care and promote antimicrobial stewardship, its benefits must be carefully weighed against costs, given the small proportion of positive tests and lack of significant differences in the average length of stay.

167: Diagnosis of Amoebic dysentery prior to obtaining travel history, using rapid faecal multiplex PCR

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Introduction
The Serosep EntericBio® is a multiplex PCR system which includes the DX panel, a nine-target panel covering common and important faecal pathogens. It was recently adopted by Liverpool Clinical Laboratories as first line for all faecal samples.

Case Presentation
A 48 year-old man presented with bloody diarrhoea, abdominal pain and fever. On examination he was jaundiced and had abdominal tenderness. Liver function was deranged (mixed picture) and inflammatory markers significantly elevated (CRP 317mg/L and WBC 19.5 x 109/L). Initial assessment detailed no relevant travel history. The preliminary differentials were gastroenteritis or inflammatory bowel disease (IBD).

A stool sample tested positive for Entamoeba histolytica on EntericBio, with the result available within 4 hours of A&E Triage. He was reviewed by an infection specialist and commenced on anti-protozoal medication (metronidazole and paramomycin) and underwent further investigation to diagnose an amoebic liver abscess. On questioning, he had returned from India, consuming street food in rural areas.

Discussion: Multiplex PCR testing of stool with EntericBio® DX panel led to the rapid diagnosis of amoebiasis. Previously, diagnosis would require the microscopy for cysts, hot stool for trophozoites by a parasitologist or dedicated PCR at a reference laboratory. These tests would only be requested if the travel history was given.

Conclusion: Amoebic colitis and liver abscess is a rare diagnosis and easily missed, leading to life-threatening complications or relapsed infection. Multiplex PCR allows for the rapid detection of uncommon, but important pathogens in secondary care with rapid turnaround times leading to prompt diagnosis and treatment.

172: Improving the Diagnosis of Urinary Tract Infections in Primary Care: What we learn from Getting It Right First Time

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Urinary tract infections are one of the most common infections throughout the population. More than 50% of women and around 12% of men will suffer from a UTI during their lifetime. Urine samples are amongst the most frequently submitted samples to microbiology laboratories.
The microbiology department at Lancashire Teaching Hospitals was identified as a low-outlier for rejected urine samples by GIRFT (Getting It Right First Time). The aim of this project was to identify the baseline of urine culture requests from primary care, identify trends, and to propose interventions that might improve the diagnosis of UTIs.
Laboratory IT systems were interrogated for all urine culture requests from primary care over a six-month period.
27,476 urine specimens were received over the study period. 19,737 (71.8%) of these requests had absent, or unhelpful clinical details, or clinical details not suggestive of a UTI. 544 (2.0%) were rejected by the laboratory, mostly unlabelled or leaking specimens. Mixed growth was detected in 2,505 (9.1%) of specimens, suggesting poor quality sampling. There was over a five-fold variation in sampling numbers per capita of registered patients between requesting locations.
These findings suggest that engagement is required with primary care users to improve the quality of clinical details provided and information on correct sampling for patients. The laboratory can improve its processing in rejecting samples that are submitted with clinical details not suggestive of a UTI. The disparity in the number of samples submitted from different centres requires further investigation to ensure that diagnostics are utilised appropriately.

193: Utility of 16S rRNA sequencing in identifying Gordonia polyisoprenivorans PICC line infection

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A patient with lung cancer and peripherally inserted central catheter (PICC) for immunotherapy had PICC blood cultures taken which grew Gram-positive bacilli, with diptheroid appearance. Repeat paired cultures (PICC and peripheral) both grew Gram-positive bacilli, as did another pair of samples taken six days later. The four isolates grew aerobically on blood agar. MALDI-TOF MS (Biomerieux) failed to identify two of them, one was identified as 50%:50% Corynebacterium pseudodiphtheriticum:Corynebacterium urealyticum and another was identified with high confidence as Corynebacterium urealyticum. There was hesitance from the patient and clinical team for hospitalisation, antibiotics and PICC removal as he was systemically well and it was unclear if the organisms represented different commensal isolates rather than true line infection.

The isolates were sent to the Reference Laboratory for 16S rRNA sequencing. Three of the four isolates were flagged as mixed due to variable colony morphology. Distinct colony types of each isolate were picked for DNA extraction and 16S rRNA PCR/sequencing (hypervariable regions V1-V9). Sanger sequencing used 5 primers to obtain overlapping reads and at least two-fold coverage across the whole amplicon. With each isolate, three of the five Sanger chromatograms were partially or entirely mixed. Despite the conflicting MALDI-TOF results, variable colony morphology, and mixed 16S rRNA Sanger traces, all of which suggested a polymicrobial infection, all colonies from all isolates were identified as a single Gordonia polyisoprenivorans clone with a 16S rRNA intragenomic indel copy variant. The patient received Vancomycin, the PICC was removed and repeat blood cultures had no growth.

204: Diagnostic Performance Of A Novel Four-In-One Lateral Flow Test (Coretests® Combo Ag Test) For Respiratory Viruses: A Pragmatic Two-Site Study In Adults And Paediatric Acute Respiratory Patients

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BACKGROUND

The Coretests® Combo Ag Test is a novel, CE-marked, immunochromatographic lateral flow device for the simultaneous detection of influenza A, influenza B, SARS-CoV-2, and RSV on nasal swab specimens.

METHOD

Two (paired) swabs were collected via convenience sampling in 502 patients with acute respiratory symptoms admitted to two NHS Trusts (Airedale General Hospital and Bradford Royal Infirmary) during the winter period 2023/2024. The Coretests® Ag Test was performed by frontline healthcare staff at the time of patient presentation, whilst the reference standard PCR test on the Cepheid GeneXpert® was performed in a clinical laboratory.

RESULTS

There were 502 results (212 adults, 290 paediatrics) with mean age 27.0 years (range 0.1 to 99), 53.6% males, 46.4% females. The diagnostic performances (Sensitivity, Specificity, with 95% CI) were:

Overall: 60.8% (53.0-68.3), 99.2% (98.7-99.6)
Influenza A: 65.8% (56.2-74.5), 98.2% (96.4-99.3)
Influenza B: 38.5% (13.9-68.4), 98.8% (97.4-99.6)
SARS-CoV-2: 53.6% (33.9-72.5), 100% (99.2-100)
RSV: 57.1% (28.9-82.3), 99.8% (98.9-100)

DISCUSSION

Compared with PCR, the lateral flow test had:
- 14 (2.8%) false positives which were only observed in paediatric samples (7 influenza A, 6 influenza B, 1 RSV)
- 65 (12.9%) false negatives which were present in both patient populations (38 influenza A, 8 influenza B, 13 SARS-CoV-2, 6 RSV).

CONCLUSION

The Coretests® Combo Ag Test demonstrated good overall sensitivity of 60.8% and excellent overall specificity of 99.2%. It has the advantage of providing diagnostic testing for four common respiratory

winter viruses simultaneously and should therefore be considered a cost-effective option for use in frontline care.

218: A regional, multi-centre retrospective analysis of the clinical impact of CSF BioFire® FilmArray® Meningitis/Encephalitis Panel testing on length of stay and antimicrobial prescribing practice

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Central nervous system (CNS) infections carry significant morbidity and mortality, which may be mitigated by early microbiological diagnosis. Direct molecular-based testing can offer rapid pathogen identification. One platform is The CSF BioFire® FilmArray® Meningitis/Encephalitis Panel (BioFire), testing 14 common CNS pathogens, and was recently introduced across multiple hospitals in our region.

We undertook a retrospective analysis of CSF samples (submitted pre and post-introduction of BioFire) from three NHS trusts in the south-west of England. We investigated for length of stay (LOS), turnaround time, and in one NHS trust, impact on antibiotic prescribing in paediatric patients.

Monthly, each trust performed 115-150 lumbar punctures (LPs). 37.3-45.2% of CSF samples met criteria for BioFire testing to investigate CNS infection, with 5.8-15.3% positivity rate. Turnaround time from sampling to result was 6h-10h with the BioFire. In the cohort in whom antibiotic prescribing was analysed, time to rationalisation of antibiotics following LP fell by 48.7% with the introduction of the BioFire, alongside a 32.8% decrease in the overall duration of antibiotics, resulting in a similar fall (32.2%) in LOS.

The introduction of the BioFire ME panel, with rapid turnaround time, has resulted in earlier microbiological identification of causative organisms in CNS infections across the region. Rapid negative results have also allowed earlier rationalisation of antibiotics, promoting antimicrobial stewardship. It has also reduced LOS, with further work ongoing to explore this impact particularly for those in whom CSF was sampled during acute admissions, alongside more widespread analysis of the impact on antimicrobial stewardship.

272: Introducing a multiplex bacterial PCR for use in mechanically ventilated patients with suspected respiratory tract infection in critical care units across a multi site university teaching hospitals trust.

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Objectives: To introduce the use of a multiplex bacterial PCR (BioFire FilmArray Pneumonia Plus Panel) in mechanically ventilated patients with suspected respiratory tract infection (suspected Community Acquired Pneumonia, Aspiration Pneumonia, Hospital Acquired Pneumonia of Ventilator Associated Pneumonia) in two critical care units across a multi site university teaching hospitals trust.

Methods:
From December 2022 to April 2023 Brochoalveolar Lavage (BAL) and Non-directed Bronchoalveolar Lavage (NBAL) samples taken from mechanically ventilated patients with suspected respiratory tract infection, were tested using Multiplex bacterial PCR alongside routine microscopy and culture. Time to results, and numbers of positive results were compared between the PCR testing and culture. Cases were reviewed for changes to antimicrobial therapy on the basis of the PCR results.

Results:
62 multiplex bacterial PCR test and 48 culture results were available for comparison. Likely pathogenic organisms were identified in 31 multiplex bacterial PCR tests and 18 culture results. Mean time to result was shorter for PCR samples (23hrs) compared to culture samples (95hrs). A number of cases were identified in which early identification of a pathogenic organism allowed narrow spectrum antimicrobial therapy.

Discussion:
Use of multiplex bacterial PCR testing allowed earlier, and more frequent, identification of pathogens in cases of respiratory tract infections in mechanically ventilated patients in critical care, allowing appropriate changes to antimicrobial therapy, including narrow spectrum therapy, in cases were otherwise broad spectrum therapy would have likely continued.

Conclusion:
Use of multiplex bacterial PCR testing can aid antimicrobial stewardship practices in mechanically ventilated patients.

Education and training

22: “Snakes…why did it have to be snakes?”

An in-situ simulation exercise for the management of occupational Dendroaspis polylepis envenomation in a high-resource setting

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Background
Snakebite envenomation is a Neglected Tropical Disease that kills >100,000 people annually in the Global South, and is an occupational hazard for venom researchers and herpetologists. Early supportive care and access to antivenom is critical to prevent death and disability.
The Centre for Snakebite Research & Interventions at the Liverpool School of Tropical Medicine houses >150 venomous snakes. We devised a scenario of a staff member bitten by a black mamba (Dendroaspis polylepis), to assess preparedness and refine a local standard operating procedure (SOP).
Methods
Planning sessions included a “talk-through” of the SOP with herpetarium staff and Infectious Diseases (ID) and Emergency Department (ED) physicians from the Royal Liverpool University Hospital, followed by serial in-situ simulations to identify latent errors in the SOP.
Results
The first in-situ simulation identified communication challenges, including failure to pre-alert the ED and the ID on-call clinician and a subsequent delay in requesting antivenom. Following SOP revision to address human factors, a repeat immersive in-situ simulation tested the response of the ED, ID and anaesthetic teams and the national poisons information service (NPIS). The “victim” arrived in the emergency department within 15 minutes of the bite, and antivenom was authorised by the NPIS consultant less than an hour after the bite. A clinical quick-reference guide proved valuable.
Conclusions
Our experience emphasises the value of in-situ simulation to prepare for rare, high-risk, high-complexity scenarios, and should be considered by all hospitals located near venomous snake collections.

51: Clinical Microbiology Consults – An Opportunity for Education

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Background
Clinical Microbiology service for the South East of Ireland currently; attending the needs of St Luke's General Hospital Kilkenny, Wexford General Hospital, South Tipperary General Hospital and locally. Presently, CM is predominantly a specialist consult service. The aim of this study was to evaluate the nature of these consultations, as an opportunity for future education and task force planning.

Materials/Methods
All consultations over a 1-week period were noted. The were divided into six broad categories – general advice on treatment of infection and/or antimicrobial therapy, antimicrobial escalation plans, alternative antimicrobial options due to documented allergies or drug interactions, infection prevention and control, interpretation of laboratory results and diagnostic advice.

Results
124 telephone consultations (TCs) were received during the study period, with 71% (n=88) originating from peripheral sites. Registrars were the predominant point-of-contact, 47.6% (n=59). The Department of Surgery accounted for 58.9% (n=73). Majority of TCs sought general advice on treatment of infection (33.1%, n=41); in particular, respiratory (24.2%), skin and soft tissue (15.3%) and urinary tract (13.7%) infections. Antimicrobial escalation plans accounted for 20.2% (n=25), followed by interpretation of laboratory results (15.3%, n=19). Collectively 6.6 hours were spent on TCs. Interestingly, solutions to 25% (n=31) were available on the hospital antimicrobial guideline.

Conclusion
CM remains an invaluable resource for physicians. In order to continue providing a wholistic service, future education should address perceived abovementioned deficiencies in infection management, with a particular focus on peripheral sites. Physicians should also be regularly encouraged to review hospital guidelines.

104: 'Culturing positivity': Implementation of an inter-professional learning programme within the Microbiology department at Nottingham University Hospitals NHS Trust

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Introduction

A successful team exhibits effective communication, listening and collaboration. In the healthcare sector, developing a happy, cohesive team is essential to improve patient safety and quality of care; there is evidence that those who train together are safer together. In an increasingly busy environment, how do we instil these qualities when individuals may feel distanced from colleagues or a common goal?

Methods

We developed an inter-professional learning programme within our department to foster these essential qualities. Timetabled learning experiences are guided by a nominated multi-disciplinary duo (usually a trainee specialist biomedical scientist and registrar in Medical Microbiology/Virology) with self-selected topics to complement the medical curriculum and laboratory portfolio requirements. The sessions allow discussion and problem-solving in a safe, friendly environment.

Outcomes

We measured quantity of sessions performed and gathered qualitative feedback using surveys conducted before and 30 weeks into the programme. 14 sessions were undertaken over 32 weeks with an average of 10 attendees per session. Survey responses increased from 5 to 13, demonstrating improved trust and engagement with the project. Feedback was excellent, with trainees reporting a positive experience for personal development and portfolio completion and an increased appreciation of each other's roles and responsibilities.

Evaluation

Prioritisation of psychological safety and wellbeing creates an open, honest culture where colleagues feel able to speak up. Forming a team with a common sense of purpose is essential to provide a high quality service. We are overseeing this project into the next training year to ensure it becomes embedded into practice.

112: An audit of Pseudomonas bacteraemia management at a tertiary care teaching Hospital

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Introduction:
Pseudomonas bacteraemia is associated with high mortality as compared to other gram negative bacteraemia and a common cause of hospital acquired infections. There are limited antibiotic options. Also, there is no consensus guideline on the optimal duration of treatment. According to PHE guidance for health care associated BSI, BSI following 48 hrs of admission is identified as HCA BSI.

Method:
Retrospective audit reviewing data from April 2023 till April 2024 with pseudomonas bacteraemia. Data was retrieved using trust database, including age, gender, underlying comorbidities, initial antimicrobial treatment, potential risk factors, duration of antibiotics and 30 day mortality.

Results:
A total of 64 blood cultures grew pseudomonas species, 92.8% being pseudomonas aeruginosa. Co-morbidities included Diabetes, Malignancy, long term urinary catheters and recurrent UTI. Risk factors included recent hospitalisation, recent antibiotic usage and surgical interventions. 35% of the bacteraemia were deemed to be HCA BSI. Repeat Blood cultures were performed in 45% of patients. Failure of clearance in 24 hours noted in 2 patients with no further repeat blood cultures. 37% of the patients were treated with Piperacillin/Tazobactam, 27.5% received Ceftazidime, 14.5% received Meropenem, and 1 patient had IV ciprofloxacin. 36% of patients were switched to oral antibiotics whereas rest received full course of IV antibiotics. The Median total duration of antibiotics was 12 days. 30 day mortality was 29%

Conclusion:
Only 1/3 of pseudomonas bacteraemia were deemed to be HCA with no MDR Pseudomonas identified. Antimicrobial stewardship and reducing un-necessary procedures will further help decreasing HCAI Pseudomonas bacteraemia.

Environment

14: Carbapenemase genes in the aqueous hospital environment - Results from environmental sampling of sinks in an acute care hospital during a period of high colonization pressure

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Background
Sinks have been implicated as a source of transmission events of carbapenemase-producing organisms from environment to patients. In March 2023, a cluster of 10 patients tested positive for rectal colonization of carbapenemase genes (CP-genes) in Ward A, a general medical ward in Tan Tock Seng Hospital. Nine patients harboured rectal carriage of bla(OXA-48)-producing organisms and one patient harboured bla(IMP). Environmental sampling of the sinks in Ward A was performed to understand the role of sinks in CP-gene transmission.

Methods
Seventeen sinks were sampled at three sites each – sink faucet lumen, superficial surface of sink/sink-trap and sink-trap fluid. Surface samples were taken using an Eswab® moistened with sterile water. Fluid samples from sink traps were obtained by aspirating fluid with sterile syringes attached to nasogastric tubes extending down the sink-trap. Carbapenemase genes were detected by performing Xpert® Carba-R (Cepheid) real-time multiplex PCR assay on specimens obtained.

Results
Twenty (39.2%) out of 51 samples were positive for CP-genes: 11 sink trap fluids, eight sink surface and trap swabs, and one faucet swab. bla(IMP) alone was identified in 15 samples, with combinations of bla(IMP)+bla(NDM-1) genes in two, bla(IMP)+bla(VIM) in two, and bla(IMP)+bla(OXA-48) in one. All faucet swabs were negative.

Conclusions
Most CP-genes identified in the sinks of Ward A were bla(IMP), differing from the predominance of bla(OXA-48) rectal carriage amongst patients, suggesting that sink microbiology may not be associated with human transmission. Further research is required to understand the significance of CP-genes detected in these sites and their role in transmission.

158: Workflow assessment for cleaning ventilation ducts in hospitals

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Introduction
The COVID-19 pandemic underscored the critical role of effective ventilation in minimizing airborne viral transmission. For a vulnerable hospital population, hospital ventilation systems can pose a risk if not maintained correctly. Dust accumulation in air ducts can foster environments conducive to fungal spores, such as Aspergillus, potentially leading to severe infections like invasive aspergillosis. Recognizing these risks, our study aimed to develop a safe protocol for cleaning ventilation systems on an active ward in healthcare settings.

Methods
We conducted a controlled cleaning of ventilation ducts in two hospital rooms. In one room, the ducts were accessed internally, while in the adjacent room, the ducts were primarily accessed from outside. Air quality was monitored by counting particles in 100-liter samples using a calibrated air sampler every 15 minutes before, during, and after the cleaning process and by collecting microbiological specimens. Specimens were analyzed using standard procedures for environmental sampling.

Results
In-room cleaning caused a significant spike in airborne particles of all sizes, along with a modest increase in Aspergillus spores, which took an hour to return to baseline levels. Conversely, external access for cleaning did not notably impact room air quality.

Conclusion
These findings highlight the risks associated with internal duct cleaning, especially for patients at heightened risk of invasive aspergillosis. Cleaning from outside the room proves to be a safer method, ensuring minimal disruption to the critical air quality in patient care areas. This study supports the necessity of strategic planning in hospital ventilation maintenance to protect vulnerable populations.

165: Audit of Aspergillus species isolated from bronchoalveolar lavage (BAL) fluid cultures between 2022 – 2023: an institutional review

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Increased isolation of Aspergillus spp. from elective BAL cultures was noted in 2023. A new ventilation system had been installed in close proximity to the bronchoscopy suite in 2023.

We audited clinical and laboratory features to ascertain if the increase was related to contamination, increased infection or colonisation.

All BAL samples from the bronchoscopy suite, which isolated Aspergillus spp. for the two year period were reviewed. Amount and distribution of growth; whether susceptibility testing was performed; patients' medical history was recorded.

In 2022, 8 BAL specimens isolated Aspergillus spp. and A. fumigatus was isolated from 22 specimens in 2023 (300% increase). Antifungal susceptibility testing was performed on 50% and 40% of isolates in 2022 and 2023. No patients were treated for invasive pulmonary infection. Retrospective differentiation of colonisation from contamination was difficult.

Pre and post laboratory processes and facilities were reviewed. Air sampling and environmental screening samples from bronchoscopy suite and laboratory did not isolate Aspergillus spp. A window and a door in adjoining corridor were noted to be openable.

Quantification and distribution of growth is now recorded for all Aspergillus spp. to help assess significance. Multidisciplinary liaison determines clinical significance of isolates prospectively.

The increased isolation of Aspergillus spp. appears to be related to environmental contamination during the procedure and does not appear to have led to subsequent infection in these patients. The unsealed window and door were the only issues noted, and postulated that these may have been opened occasionally allowing unfiltered air to enter the unit.

266: Presence of multidrug-resistant microorganisms in patient toilets: a cross-sectional analysis in a non-outbreak tertiary care setting

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Background
Hospital toilets have shown to be reservoirs of multidrug-resistant microorganisms (MDRO). This has mainly been studied in outbreak settings. We investigated the presence of MDRO in patient toilets in a tertiary care hospital in the Netherlands, in a non-outbreak setting and with an overall low prevalence of MDRO.

Methods
Patient toilets from one medical ward with a history of sewage overflows in bathrooms (n=16) and one surgical ward without history of sewage overflow (n=16) were included. Two samples were taken from each toilet bowl (E-Swab®, Copan) and one from each toilet water (100 mL). Samples were cultured for extended-spectrum beta-lactamase (ESBL)-producing Enterobacterales, carbapenemase-producing Gram-negative rods (CPGN), vancomycin-resistant Enterococcus faecium (VRE), and Candida auris using selective media. Carbapenemase genes were detected by PCR.

Results
In the medical ward, 34 MDRO (14 species) were present in 11/16 toilets (69%), including blaOXA-48-positive Citrobacter freundii, blaGES-positive Alcaligenes faecalis, blaKPC-positive Aeromonas hydrophila, and blaIMP-positive Comamonas spp. (one of each). In the surgical ward, 19 MDRO (5 species) were found in 9/16 toilets (56%), including two CPGN: blaOXA-48-positive Citrobacter freundii and blaVIM-positive Citrobacter freundii. VRE and C. auris were not detected.

Conclusion and discussion
MDRO, including CPGN, are present in hospital toilets in low-MDRO-prevalence settings. Sewage overflow may be associated with a larger variety of MDRO bacteria in toilets. Further research is needed on transmission dynamics of these MDRO from toilets to their surroundings and to patients, taking toilet design and the wastewater pipeline situation into account.

Fungal infections

47: Central line-associated Cyberlindnera fabianii fungemia: An Emerging Fungal Pathogen

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Introduction

Cyberlindnera fabianii(CF) is an environmental yeast, and human infections have rarely been reported. Timely identification of this unusual pathogen and the use of targeted antifungal therapy are crucial to avoid treatment failure.

Case

A 26-year-old gentleman presented with a fever and felt unwell following an uneventful scheduled session of hemodialysis. His ESRD is secondary to FSGS, diagnosed 5 years ago. No obvious sources of infection were detected. Investigations revealed CRP 251. Therefore, piperacillin/tazobactam was started; however, the blood cultures from the permcath revealed budding yeast, (figure 1). The permcath was removed, and anidulafungin was started for presumed candidemia. The MALDI TOF-MS identified the yeast Cyberlindnera fabianii. Antifungal susceptibility, Sensititre YeastONE, confirmed low MIC to Echinocandins, Table1. The echocardiogram and eye examination showed no valvular vegetation or endophthalmitis, respectively. The patient completed a two-week course of anidulafungin with an uneventful hospital course.

Discussion

CF, an ascomycetous yeast, was first described in 1948, and since then a few cases have been reported. The clinical syndromes reported to date include CNS infections, endocarditis, and pneumonia. Identification of CF can be challenging, but MALDI TOF MS demonstrates the ability to identify this yeast at the species level. CF forms a biofilm, which facilitates azole cross-resistance and prevents antifungal agents from crossing the fungal cell wall.
Importantly, data on the antifungal susceptibility of CF isolates are scanty; however, echinocandins exhibit a low MIC. Early diagnosis and effective therapy for CF fungaemia are crucial for improving prognosis and avoiding devastating consequences.

65: Central line colonization vs infection with an uncommon fungus, Exophiala dermatitidis in a neutropenic cancer patient

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Background-
Exophiala dermatitidis is a dematiaceous fungus known to cause superficial, subcutaneous, cutaneous and deep seated infections, and rarely central line associated bloodstream infection (CLABSI). We describe a case of central line colonization in a neutropenic cancer patient.

Case report
Sixty-seven-year-old male, diagnosed with plasma cell myeloma admitted electively for auto stem cell transplant. He had completed 4 chemotherapy cycles and had a Hickman line inserted 6 weeks ago. He was on carbamazepine for epilepsy.
Following 7 days of auto stem cell transplant, he developed neutropenic sepsis and empirically started IV Tazocin and switched to meropenem after 48 hours due to lack of improvement. Peripheral blood culture was positive for Enterococcus faecium and vancomycin was added. Accompanied blood cultures from Hickman line was positive for yeast and IV caspofungin was started. The yeast was identified as Exophiala dermatitidis by Matrix Assisted Laser Desorption/ Ionization-Time of Flight (MALDI-TOF) Mass Spectrometry. Caspofungin was changed to voriconazole and vancomycin continued for 7 days and meropenem was stopped. Repeat blood cultures from the Hickman line was again positive for E.dermatitidis and Hickman line was removed immediately. Repeat peripheral blood cultures taken consecutively for 3 days were negative and patient clinically improved dramatically.

Discussion
Even though voriconazole levels were subtherapeutic, patient improved after line removal and recovered from neutropenia. There was no evidence of disseminated fungal infection. We believe this may be line colonisation rather than CLABSI. However, considering the patient's risk factors, voriconazole was switched to isavuconazole and treatment completed.

103: A rare cause of fungal sinusitis

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A 60-year-old male carpenter presented to the Ear, Nose and Throat (ENT) department with left-sided facial pain and chronic nasal discharge. He was previously fit and well and was not diabetic. On examination there were thick nasal secretions, and a mass was seen on the left side of nasopharynx; his ears and throat were patent. Computed tomography with contrast and magnetic resonance imaging of sinuses were suggestive of antrochoanal polyp/chronic left maxillary sinusitis. Left Functional Endoscopic Sinus Surgery was performed where a fungal ball/polyp was seen. This was removed and a biopsy sent to Bristol Mycology Reference Laboratory for panfungal polymerase chain reaction (PCR). He was followed up by ENT two weeks later and a black eschar eroding the left inferior turbinate was seen, warranting admission.

Repeat imaging suggested residual fungal sinusitis in the left maxillary sinus. The histopathology sample showed dense aggregates of broad pauciseptate fungi with fruiting heads occasionally branching at 90-degree angles, consistent with sinonasal mucormycosis. Panfungal PCR test using Nuclear Ribosomal Repeat Region sequencing was Mucorales PCR negative but positive for Scedosporium species. Tissue culture yielded Pseudomonas aeruginosa, Citrobacter freundii, Staphylococcus epidermidis and Finegoldia magna. No fungi were isolated.

The diagnosis was scedosporium sinusitis with concomitant bacterial infection. The patient was initially treated with liposomal amphotericin B and broad-spectrum antibiotics. Following his PCR result his antifungals were changed to isavuconazole, prescribed initially for least six weeks with further review. He underwent further surgical debridement and continues to be followed up by ENT but remains symptom free.

171: Screening for infective endocarditis in patients with candidaemia: experience from a single-centre study

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Background: Candida infective endocarditis (CIE) is a rare but serious complication of candidemia, with high mortality. The 2012 ESCMID guidelines recommend transesophageal echocardiography (TOE) for CIE assessment in candidemia patients, a recommendation absent in the 2014 IDSA guidelines (updated in 2016). Local guidelines often lack clear directives on routine echocardiography. Recent studies suggest routine screening can detect unsuspected CIE, but its rarity and resource demands make this debatable. This study aimed to evaluate CIE prevalence and echocardiography use in candidemia patients.

Methods: We conducted a retrospective audit of all adult patients (≥18 years) with at least one positive blood culture for Candida species between June 2022 and June 2023.

Results: Among 28 patients, only one underwent TOE during their candidemia episode. Fifteen patients (53.5%) had a transthoracic echocardiogram (TTE) within 14 days of the first positive blood culture, most within 7 days. Cardiologist consultations occurred in 14.3% of cases. TTE requests were denied in four cases, primarily due to not meeting Duke's criteria. Within three days of the initial positive blood culture, 57.1% received microbiologist advice on CIE assessment, recommending echocardiography in 75% of these cases and conditionally in 25%. CIE was confirmed in two patients (7.1%).

Conclusion: In our centre, CIE investigation in candidemia patients is inconsistent, with TTE preferred. The low incidence of CIE calls for further studies to determine the utility of routine screening and the best echocardiography method. A risk-stratification score for CIE, like those for SAB-IE, may aid decision-making.

194: Breaking the Code! How accurate is clinical coding at defining aspergillosis?

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Clinical coding is the analysis of information about an episode of patient care and assignment of standardised codes using a classification system. This may be straightforward, but for infections such as the fungal infection aspergillosis where a diagnosis is often very difficult and many markers non-specific this is likely to be complex.

We obtained NHS numbers of patients who had the clinical code for Aspergillosis (B44.0, B44.1, B44.2, B44.7, B44.8 or B44.9) for a 12-month period between 1/11/20 and 31/10/21 for Leeds Teaching Hospitals Trust and reviewed the medical notes for them. Twenty-six patients had these codes assigned and of these 19/26 (73%) had a formal diagnosis of aspergillosis or were treated for aspergillosis. Two of 26 cases (7.6%) were empirically treated for aspergillosis then antifungals ceased after MDT discussion and negative serology. Five out of 26 (19%) had no formal diagnosis nor were treated for aspergillosis.

Clinical codes are used to supply national epidemiological data such as Hospital Episode statistics (HES) and this study places some doubt on the accuracy of Aspergillosis data and indicates a need to work out ways of indicating to coders if patients have or continue to have diagnoses of aspergillosis. Regular analysis of coded information and routine audit by an approved clinical coding auditor should be a key part of a trust's quality assurance programme.

233: Increasing Candida (Candidozyma) auris reports in England; 2020-2024

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Background
Candida (Candidozyma) auris is an emerging multi-drug resistant fungal pathogen notable for its resilience in the environment and limited treatment options. C. auris can cause serious infections in the immunocompromised and invasive infections may result in significant patient mortality. The World Health Organisation recently categorised C. auris as a critical priority fungal pathogen.

Results
UKHSA's routine laboratory surveillance and Mycology Reference Laboratory report increased patients with first detections of C. auris: 2020: 5, 2021: 26, 2022: 38, 2023: 93, 2024 up to and including April: 61. These are predominantly colonisations rather than infections, there were 18 bloodstream infections (8%). There are currently ongoing outbreaks in two NHS Trusts located in London and South-East England, and these regions report 87% (193/223) of C. auris detections. Patients with C. auris reports are more likely to be male (74%, 107/145) and aged over 50 (78%, 174/223).

Conclusions
C. auris is now endemic in many countries around the world and UKHSA has noted increasing detections of C. auris in the UK, including two ongoing outbreaks. UKHSA guidance for C. auris laboratory investigation, management and infection prevention and control has been updated to incorporate the latest knowledge from published literature following open consultation. It was published in conjunction with a briefing note to the health system requesting that all laboratories voluntarily report C. auris isolates to UKHSA. UKHSA is working with the Department of Health and Social Care to consider inclusion of C. auris in the schedule 2 list of notifiable causative agents.

General

131: Those that do say 'AI'

'A debate on the role of artificial intelligence in infection medicine - are we all out of a job?'

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The main stream use and accessibility of artificial intelligence technology over the past twelve months is unprecedented. Stanford university reports 'AI has surpassed human performance on several benchmarks including image classification and visual reasoning.' Within medical practice the relevance of this is most apparent within diagnostic specialities; in particular radiology. Dembrower et al report earlier and more accurate breast cancer diagnosis based on AI reading of mammography. The Economist as early as 2018 sites Geoffrey Hinton saying “It’s quite obvious that we should stop training radiologists,”

So what does AI mean for infection as a speciality? We are here to debate the role of AI in managing people with infection. We will provide a balanced review of the evidence to date, for and against the probability of (scientists/ clinicians) being replaced by AI bots. The session is designed to be interactive and conversational… what role do we want AI to play in our speciality? We can already see the evidence of machine learning in the development of new MRNA vaccines. An artificial tool created by Baidu Research optimises the gene sequences found in COVID MRNA vaccines helping to produce drugs with greater potency and stability i.e. ones not requiring a cold chain, giving them greater utility.
At the end of the session we will take a vote from the audience … Those that do say AI!

143: Do we still need three negative tests to exclude malaria? An audit of malaria screening practices in Greater Glasgow & Clyde.

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Objectives

Malaria is a life-threatening infection which should be excluded in febrile travellers from endemic areas. UK guidelines suggest three negative blood films and/or rapid diagnostic tests (RDTs) are required to exclude malaria, however this guidance predates the availability of highly-sensitive RDTs. As part of an audit of malaria screening practices, we aimed to establish the sensitivity of a single RDT and/or blood film in diagnosing patients with subsequently confirmed malaria.

Methods

Total numbers of malaria RDTs performed and PCR-confirmed cases of malaria in NHS Greater Glasgow & Clyde from January 2022-December 2023 were obtained from local and reference laboratory records. A review of demographic data of all patients with confirmed malaria was undertaken.

Results

1110 malaria RDTs were performed in 620 patients. 53 cases of confirmed malaria were identified, including 41 adults and 12 children <16 years old.

32/53(60%) were returning travellers, of whom 6/32 (18%) were born in the UK. 13/53(25%) had recently moved to Scotland, 3/53(6%) were visitors to Scotland. There was insufficient demographic information for 5/53(9%) patients.

The first RDT and/or blood film was positive for 52/53(98%) patients, with only one person being negative on first screen and positive on second screen. This individual had plasmodium falciparum infection with parasitaemia <1%.

Conclusions

This audit data suggests with modern highly-sensitive malaria RDTs, three tests may not be necessary or cost-effective particularly where clinical/epidemiological likelihood of malaria is low. A larger national study over longer duration, ideally with clinical risk data included, is required to confirm this.

169: Chemoprophylaxis for latent tuberculosis in the UK: Changing trends across three cohorts

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Introduction: UK national guidance for screening for tuberculosis (TB) has changed over the years. This study retrospectively evaluated the shifts across three cohorts of latent TB cases managed over a thirteen-year period in our hospital.

Methods: Patients diagnosed with latent TB between January 2019-December 2021 (Cohort-3) were evaluated and compared to previous studies of Cohort-1 (September 2008-October 2011) and Cohort-2 (November 2011-October 2014). Patient demographics, screening rationale, chemoprophylaxis acceptance and completion rates, and side effect profiles were compared.

Results: This study included 363 latent TB patients, with increasing cohort size of 59, 113, and 191 respectively. Over half of Cohort-1 and 3 were aged 35 and under. Cohort-1 and 2 predominately comprised patients from sub-Saharan Africa (62% and 54%), while Cohort-3 had a majority of "White-British" patients (31%) with only 14% from sub-Saharan Africa. Referral sources varied;Cohort-1 included contact screening (41%) and occupational health (32%); Cohort-2 mainly occupational health (63%) and contact screening (21%); in Cohort-3, most referrals were from other specialties (46%). Chemoprophylaxis acceptance was highest in Cohort-2 (92%), followed by Cohort-1 (79%) and Cohort-3 (78%). Completion rates were 91% for Cohort-1, 93.4% for Cohort-2, and 96% for Cohort-3. Chemoprophylaxis uptake varied among healthcare workers across cohorts, and side effects were variable across cohorts.

Conclusion: Demographic shifts reflect changes in TB screening guidance, with increasing referrals from specialties requiring immunosuppressive therapy. Interestingly, acceptance rates closely mirrored healthcare worker uptake in Cohort-1 & 2. Most referrals from other specialties had limited treatment choice, possibly contributing to higher uptake in Cohort-3.

208: Pasteurella infections in the West of Scotland: a 10-year retrospective analysis

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Background:
Pasteurella species are common causes of zoonotic infections associated with animal bites or scratches. Invasive infections such as bacteraemia, while rare, can result in significant morbidity and mortality.
Methods:
We reviewed all isolates of Pasteurella species between 2012 and 2022 in NHS Greater Glasgow and Clyde. In patients with bacteraemia, we further describe patient demographics, clinical presentation, treatment, and clinical outcomes.
Results:
770 Pasteurella isolates were identified in 557 patients across the 10-year period. 19 patients (3.4%) had invasive infections, including Pasteurella species in blood cultures (14/19) synovial fluid (2/19), pleural fluid (1/19) ascitic fluid (1/19) and in a brain abscess (1/19).
In the 14 patients with bacteraemia, 11 (79%) were exposed to animals, predominantly cats (73%). The median age was 53 years old (IQR 15-82) and 67% were male. Pasteurella multocida was implicated in 93% and the source of bacteraemia was mainly skin and soft tissue (71%), followed by respiratory infections (21%). Intravenous amoxicillin-clavulanic acid was the most commonly prescribed antimicrobial (57%), and was administered for 7-14 days in most patients. A major comorbidity was identified in 93% of patients.
11 patients with Pasteurella bacteraemia fully recovered with an average length of hospital stay of 15.5 days. 3 patients died during admission. Causes of death were complications related to thromboembolic stroke, severe cellulitis and osteomyelitis. Overall all-cause 6-month mortality in patients with bacteraemia was 36%.
Conclusion:
This multicentre descriptive study is the first to describe Pasteurella infections in Scotland. Invasive infections are uncommon but carry a high mortality.

270: Discitis: A retrospective review of cases from a large teaching hospital over a one year period and a multi-specialty management pathway

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Introduction: Discitis is a condition associated with significant morbidity and mortality. Its incidence has doubled over the last 10 years. Diagnosis requires a high index of suspicion, and is often delayed.
Methods: Cases presenting to a large neurosurgical centre over a 12 month period were identified and individually reviewed for presentation, comorbidities, investigations, treatment, and functional and neurological outcomes.
Results: 39 cases were identified (20F, 19M); median time to diagnosis from presentation to secondary care was 2.5 days; mean 6.3 days. 26/39 cases had a microbiological diagnosis (20% staphylococcus aureus) 19/26 were made from blood culture; 6 were obtained on biopsy. Of 13 remaining, culture from tissue or fluid were sterile in 8, 3 had no target, and 2 were improving on treatment.
51% of patients did not return to their functional baseline. 10/39 had neurological disability and another 10 had life-changing functional decline.
Conclusions: Even with prompt diagnosis, and ready access to all required specialties, outcomes for this condition are poor and managing this condition will be more challenging still at centres that do not have such ready access to neurosurgical and neuroradiological expertise. There is currently no UK or European guideline for discitis, enabling benchmarking and best practice dissemination; we share a local pathway as a starting point.

Healthcare-associated infection

45: The Correlation of Antibiotic Consumption with Clostridioides Difficile Rates at an Acute District General Hospital.

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Background: Clostridioides difficile infection (CDI) is one of the most prevalent hospital-acquired infections globally, causing symptoms from diarrhoea to pseudomembranous colitis. Recently in the UK, CDI rates have been increasing in incidence and severity, causing a growing concern within healthcare. Antibiotic consumption is the most important risk factor for CDI, as antibiotics can cause the Clostridium difficile (C. diff) bacterium to produce toxins and colonise the large intestine. This is a continuation of a project carried out between January 2019 – September 2021 at this trust, which produced unexpected findings as the significant increase in antibiotic consumption did not increase CDI rates.

Methods: A service evaluation was conducted with the primary aim of assessing the correlation between antibiotic consumption and the incidence of CDI rates at the Dudley NHS Trust between September 2021 – September 2023. A retrospective electronic database analysis was performed, using IBM SPSS software to examine the possible correlation, providing more knowledge for clinical decision-making, antibiotic stewardship, and patient safety and care.

Results: Over the study period the consumption of all antibiotics revealed a general decrease in antibiotic consumption.In Year 1 there was a general decrease in cases, whereas in Year 2 CDI cases increased.

Conclusion: As antibiotic consumption and the incidence of CDI were not significantly correlated, these findings indicate the need to explore other risk factors that influence CDI. Immediate further research is required to establish the influence of other risk factors of CDI, such as previous antibiotic treatment, proton-pump inhibitor treatment, and IPC measures.

91: A five-year review of External Ventricular Device infections in Ireland's National Neurosurgical Centre

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Introduction: External ventricular device (EVD) infections cause significant morbidity and mortality, posing a clinical challenge. This study reviewed EVD infections in Ireland's National Neurosurgical Centre over the past five years.

Methods: We retrospectively reviewed all medical records from patients with culture positive EVD cerebrospinal fluid (CSF) specimens processed between 1st January 2019 and 31st December 2023.

Results: We identified 18 patients with culture positive EVD CSF specimens deemed to be clinically significant. Of the 18 patients, 12 were male with a median age of 51 years (range 17-78 years). The median duration an EVD was in situ pre infection was 12 days (range 3-29 days). All patients with evidence of EVD infection had the EVD removed, the majority within 24 hours of diagnosis of infection. CSF Gram stain was positive in 15 cases. The most commonly isolated organisms were Pseudomonas aerginosa (n=2), Staphylococcus haemolyticus (n=2), Klebsiella oxytoca (n=2), Klebsiella pneumoniae (n=2), Escherichia coli (n=2), Staphylococcus epidermidis (n=2) and Enterococcus faecium (n=2). Two patients had polymicrobial EVD infections. Two multidrug resistant organisms were isolated: 1)ESBL-producing Klebsiella pneumoniae 2)vancomycin and linezolid-resistant Enterococcus faecium. The median number of days to CSF sterility was 5 days (range 2-19 days). The median length of stay (LOS) was 58 days (range 27-437 days) and 4 patients died.

Conclusion: EVD infections, while infrequent, present a significant clinical challenge in management, resulting in increased mortality rates and LOS. The diversity of organisms involved and associated morbidity and mortality underscores the importance of multidisciplinary management of these complex infections.

133: A clinical audit assessing adherence to NICE guidelines in the treatment of Clostridioides difficile infection at North Bristol NHS Trust: identifying relapses and recurrences as targets for quality improvement.

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[1]North Bristol NHS Trust, [2]Centre of Defence Pathology, Royal Centre for Defence Medicine

Background

Clostridioides difficile infection (CDI) remains a significant healthcare-acquired infection with significant morbidity and mortality. With the advent of newer treatments, this work aimed to assess the adherence to national standards of treatment within our trust.

Method

A retrospective cohort study was conducted over one year (2023). All inpatients with CDI (positive GDH and toxin) at our trust were reviewed by the infection team. We assessed our treatment of these patients against the 2021 National Institute of Clinical Excellence (NICE) guidelines.

Results

85 patients with CDI were eligible for inclusion. Amongst our patient group 24.7% were defined as a relapse and 2.4% suffered a recurrence.

96.5% of new cases were treated with appropriate first-line therapy. This dropped to 66.7% for the use of appropriate second-line therapy, and 69.2% for the treatment of relapse. Across all patients 17.6% failed their course of treatment, with either change of treatment required or death intervening- the rate of failure with vancomycin being almost twice that of fidaxomicin.

Discussion

Our results demonstrate that patients presenting to our trust with their first episode of CDI receive appropriate treatment in almost all cases. This drops off in the treatment of recurrences and relapses- given a quarter of our cohort experienced one of these, this is a significant target for improvement. Confirming recurrence or relapse is however difficult as most guidelines base this definition on time which may be inaccurate. Confirmatory ribotyping takes time being sent externally and considering performing in-house in the future may ensure better treatment.

160: Clostridioides difficile infection (CDI): A 6-month retrospective analysis of healthcare associated cases at Manchester University NHS Foundation Trust (MFT) to inform improvement following increased incidence

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Introduction

Clostridioides difficile diarrhoea remains an important healthcare associated infection. MFT is the largest NHS trust in England providing hospital care to a population of approx. 750,000 people. During 2023/24, in response to increased incidence of CDI across our organisation we conducted a review of learning identified from root cause analysis (RCA) to identify themes that could inform an improvement strategy.

Methods

A retrospective analysis of learning identified from RCA and electronic patient records for all healthcare associated CDI cases at MFT from April-September 2023. Thematic analysis focused on antimicrobial prescribing, CDI management and infection prevention and control practices.

Results

RCA documentation was reviewed for 153 patients. High risk antimicrobial prescribing was identified in 86% (n=132) of patients in the three-months prior to diagnosis. Of these, Co-amoxiclav (66%, 87/132 patients), piperacillin/tazobactam (33%, 43/132 patients) and cephalosporins (27%, 35/132 patients) were most common. Prescribing did not adhere with local policy in 29% (n=45) of cases. The most common reasons for antimicrobial prescribing were intra-abdominal sepsis, sepsis of unknown origin, urinary tract infection (UTI) and hospital acquired pneumonia (HAP). A relapse rate of 21% (n=32) and delay in commencing CDI treatment in 33% (n=51) of cases was observed.

Conclusions

Thematic analysis of CDI RCAs provides a powerful opportunity to identify high impact learning that can inform quality improvement at scale across acute NHS organisations. Following increased incidence of CDI across our hospitals we identified inappropriate prescribing of high-risk antimicrobials, UTI and HAP prevention, and CDI treatment delay as areas for targeted improvement.

192: Information for Action: Descriptive analysis of Gram-negative bloodstream infection (GNBSI) and antimicrobial resistance rates at London North West University Healthcare Trust (LNWH) reveals higher than National average rates in ethnic minority groups

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Introduction:
Gram-negative bloodstream infections (GNBSIs) result in significant morbidity and mortality and reduction of GNBSIs is a national and local priority. LNWH Trust has been experiencing higher-than-national-average incidence rates, prompting investigation, using local surveillance date to elucidate drivers and potential interventions.

Methods:
This retrospective, cross-sectional study extracted surveillance data for three GNBSIs (Escherichia coli, Pseudomonas aeruginosa, and Klebsiella species) from the UK Health Security Agency mandatory healthcare-associated infections system. Data were enriched using Hospital Episode Statistics for ethnicity, Ordnance Survey for residential type and UKHSA's Second Generation Surveillance System for phenotypic antimicrobial resistance data.

Results:
During April 2022-March 2023, LNWH observed higher hospital-onset (HO) rates than the national average; at 25.9 vs 22.2 for Escherichia. coli, 12.9 vs 11.1 for Klebsiella species and 9.3 vs 4.8 per 100,000 bed-days for Pseudomonas aeruginosa Reflecting the ethnically diverse population that LNWH serves, ethnic minorities accounted for a greater proportion of GNBSI cases when compared to national proportions, Asian; 38.8% vs 6.2% and Black; 10.0% vs 3.0%. Incidence rates in the Asian group were higher at LNWH than nationally; 84.5 vs 66.4 cases per 100,000 Asian population. Escherichia coli isolates at LNWH showed higher resistance to ciprofloxacin (36% vs. 17.9%), third-generation cephalosporins (29.5% vs. 14.5%), and gentamicin (14.5% vs. 10.5%), particularly in Asian and Black groups. 10% of E. coli cases were identified as care home residents.

Conclusions:
This study highlights the importance of reviewing local surveillance data to evaluate and inform the development of catered interventions aimed at reducing GNBSIs.

195: Evaluation of the feasibility of using Whole Genome Sequencing and genomic analysis to establish the relatedness of hospital Staphylococcus aureus samples

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Objectives
To determine the relatedness of Staphylococcus aureus isolates from patients receiving care in two hospitals in an NHS Trust. In doing so, providing insight into the currently unrealised potential of real-time Whole Genome Sequencing (WGS) in improving Infection Prevention and Control (IPC), reducing transmissions, and controlling outbreaks.

Methods
123 Staphylococcus aureus isolates were collected from clinical specimens from two hospitals over a 5 month period. The isolates were sent for WGS and processing into phylogeny. Genetic relatedness was determined according to the number of single nucleotide variants, with ≤ 25 considered to reflect a possible transmission event.

Results
Although phylogenetic trees showing ancestral links, there remained a large degree of genomic variation between isolates. Only 4 isolates out of 123 showed genetic relatedness with ≤ 25 single nucleotide variants (3.3%), and a further 4 isolates had ≤ 100 single nucleotide variants (6.5% overall).

Discussion
The degree of genetic variation demonstrated indicates only a small amount of transmission is likely to have occurred in hospital. However, further studies are required to establish a reliable definition of genetic relatedness for Staphylococcus aureus, accounting also for within-host diversity. Additionally, sequencing of isolates from asymptomatic patients may demonstrate more widespread transmission.

Conclusions
This study has shown that it is possible to determine the genetic relatedness of Staphylococcus aureus isolates using WGS. Transmission events and evolving outbreaks could be detected and prevented rapidly with real-time WGS. Phenotypic data could also be used to tailor IPC measures and resources according to the individual.

196: Nosocomial outbreak of Ralstonia pickettii linked to internationally distributed sodium chloride products, United Kingdom 2023-2024

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Background

Ralstonia pickettii is an environmental waterborne bacteria known to cause opportunistic infections, with capacity to contaminate healthcare products. In late 2023, UKHSA were informed by Australian counterparts of a Ralstonia pickettii outbreak associated with contaminated saline products. We describe detection and management of a linked outbreak of Ralstonia pickettii in the UK.

Methods

Case finding was conducted using the national laboratory surveillance system and direct communication with hospitals. Isolates were submitted for whole genome sequencing analysis at the national reference laboratory.

Investigation comprised trawling questionnaires and targeted product sampling. Investigation and risk mitigation required a multi-stakeholder approach, including direct engagement between the manufacturer and UK medicines regulator.

Results

Between September 2023 and January 2024 three confirmed and two probable cases were identified across the UK at separate hospitals. Confirmed case isolates were genetically indistinguishable from strains isolated in Australia with 0-4 single-nucleotide polymorphism differences over 4,218,213 sites, consistent with a common source.

Cases were aged 4 to 63 years (median 51), 3 (60%) cases were male. Confirmed cases all had Ralstonia pickettii isolated from blood cultures, clinically significant infections and indwelling lines. Control measures included voluntary recall of the product and accompanying information for healthcare professionals and the public.

Conclusion

Ralstonia pickettii is a rare but important cause of healthcare product contamination. Public health institutions should adopt a low threshold for investigation of opportunistic pathogen clusters with consideration for possible product contamination. Our experience highlights the importance of intelligence sharing and international collaboration to protect patients and the public.

216: Aspergillus niger endovascular infection following aortic valve replacement and investigation of possible theatre contamination

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A 74-year-old male had an uneventful aortic valve replacement in September-2023. He presented in February-2024 with lower limb ischemia. Femoral embolectomy cultured A. niger from two thrombus tissues. Despite antifungal treatment, residual ascending aorta thrombus persisted, necessitating thrombectomy in March-2024. Re-do-surgery thrombus grew A. niger and E. faecalis. He recovered with 6 weeks of intravenous-amoxicillin plus antifungal treatment and discharged on oral-antifungal suppressive-therapy. Investigation into possible sources of contamination was done by the infection-prevention team, alongside theatre-staff and estates. Inspection of the operating theatres found dust, an ajar ceiling panel with black deposit. Swabs taken from the theatre environment immediately following this inspection revealed various moulds in 40 of 58, including Penicillium spp. and A.niger. Some swabs taken immediately post removal of all visible dust and terminal cleaning grew moulds, but not following Hydrogen peroxide vapour treatment. Subsequently, fungal air counts were found to be within normal limits (<10 cfu/m3).

There was no A. niger culture positivity among patients who had cardiac surgery in the same theatre from 2-years prior to this case. No other case of fungal infection following cardiac surgery in the hospital has been identified to date. Our investigation revealed that recent renovation activities and lack of inspection likely contributed to deposit of dust, with possible mould contamination of the theatre environment and air. Implementing stringent protocols for personnel and regular theatre inspections are crucial in mitigating risk of postoperative invasive fungal infections.

223: Indeterminate CPE testing – What are the chances?

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Background
Carriage of Carbapenemase-producing Enterobacterales (CPE) is prolonged. Indeterminate Cycle threshold values can result from technical errors, contamination or low-level DNA. We examined indeterminate CPE PCR results for evidence of low-level carriage which could represent transitionary phases of acquisition or clearance. A case-control study was performed to examine epidemiological differences between indeterminates which converted to positive and those which remained negative.

Methods
Flowflex PCR (Roche Diagnostics) was used to detect CPE. Ct values of <30 were deemed positive and between 30-40 indeterminate. CPE indeterminate results for 3 months from the years 2019 and 2023 were reviewed. The laboratory information system (WinPath5, CliniSys) was reviewed for the results of all subsequent CPE rectal swabs to determine if they converted to positive CPE gene type and time to positivity recorded.

Results
254 patients had indeterminate CPE Ct values. 8 subsequently tested positive. Conversion rate was recorded by Ct value, range: 0 - 14.29%. Patients with lower Ct values demonstrated a higher conversion rate. Examination of those with high Ct values and a positive CPE contact history found that those patients were 1.49 times more likely to acquire CPE in the next 60 days. This suggests that contact tracing only captures a fraction of CPE exposures.

Conclusion
This work requires confirmation by a larger study but suggests that patients with a Ct value of 32-33 tested on Roche Flowflex system should be isolated and retested regularly. Values >33, the number needed to isolate to prevent acquisition is high and unachievable for most hospitals.

246: Addressing the ambiguity of Clostridioides difficile equivocal results: a retrospective analysis

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Objective:
To review Clostridioides difficile (C diff) equivocal results (i.e. GDH positive(+) plus toxin negative (-) or equivocal (EQ)) across hospital inpatients, assessing how frequently repeat stool samples were sent to clarify a potential diagnosis, the results of these, and whether empirical antibiotics were started.

Methods:
Retrospective data collection on GDH+ stool samples from October 2022–23 was performed using Cognos Analytics search of the NHS Forth Valley Laboratory Information Management System. Following exclusions, 173 C diff equivocal samples were identified. Data was analysed using Microsoft Excel.

Results:
In the toxin– subgroup (n=159), 35% had a 2nd sample sent within 7 days: 48% were GDH- and 52% were GDH+ (48% toxin -/EQ, 4% toxin+). The small sample size of the toxin EQ subgroup (n=14) was overcome by extended data collection from May 2019–2024 (n=91). Here, 39% had a 2nd sample sent: 17% were GDH- whilst 83% were GDH+ (17% toxin-, 17% toxin EQ, 17% toxin+). Empirical antibiotics were started in 5% of toxin- patients and 43% of toxin EQ patients.

Discussion:
Many C diff equivocal patients did not have a 2nd stool sample sent within 7 days, and importantly, there is a small risk that these patients become toxin+ (observed more commonly in toxin EQ subgroup). Reassuringly, patients found to be C diff equivocal on both 2nd and 3rd repeat samples did not become toxin+ within a clinically relevant timeframe. Clearer comments on C diff reports may emphasise the importance of sending repeat samples to confirm diagnosis, and promote antimicrobial stewardship.

Immunisation

20: Audit on Pneumococcal Vaccination in Patients with Pneumococcal Blood Stream Infection

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Introduction: Invasive Pneumococcal disease (IPD) is a major cause of morbidity and mortality. There are several types of pneumococcal vaccines licensed in the UK, which provide protection against different serotypes. Guidance on vaccination is found in the book 'Immunisation against infectious disease: the Green book'. Our objective was to audit the compliance with recommendations on offering pneumococcal vaccinations for patients with Streptococcus pneumoniae bacteraemia.

Methodology: We undertook a 12-month review of S. pneumoniae bacteraemia episodes. Data were collected from 01.04.2022 to 31.03.2023. Patient records were reviewed on hospital IT systems.
Standards:

- Patient's clinical team should review medical records to establish risk factor status and vaccination history
- Eligible patients should have received vaccination
- For unimmunised or partially immunised individuals, advice was given to be vaccinated upon discharge from hospital.

Results: We identified 34 patients. In 6/34 (18%), clinical team reviewed risk factors and vaccination history; 19/34 patients were eligible for the vaccine as part of the routine schedule, while 7/34 were eligible because they fell in an "at risk" group. Out of eligible patients, 12/26 (46%) had received the vaccine. No unimmunised/partially immunised individuals received advice to be vaccinated upon discharge from hospital.

Conclusion:
The audit shows low compliance with standards. This is an overlooked area of vaccination. An action plan is under way to close the gaps between current situation and the best practice given in the Green Book. This includes dissemination of results to stakeholders, updating formulary with specific vaccination recommendations, and collaboration with primary care.

151: Post-transplant vaccination uptake in haematopoietic stem cell transplant (HSCT) recipients

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Introduction:
Haematopoietic stem cell transplant (HSCT) recipients are offered a comprehensive revaccination course post-transplant. We conducted a pilot retrospective review of HSCT cases at Barts Cancer Centre to identify whether patients received the recommended vaccinations post-transplant.

Methods:
Using electronic patient records we reviewed the vaccination records of HSCT recipients between 2021 and 2022. The local vaccination protocol, based on 2017 guidance, served as the basis for assessment.

Results:
The vaccination records of 20 patients, 10 allogeneic and 10 autologous HSCT recipients, were assessed. Three records were unavailable. There was a high rate of vaccine uptake for seasonal influenza (15/17), and SARS-CoV-2 (11/17). This was lower for Haemophilus influenzae B/Meningococcal C (7/17), hepatitis B (7/17) and DTaP/IPV (5/17). For Pneumococcal vaccines 13/17 started the course, but only 6/17 completed it. No patients received the recommended doses of herpes-zoster or meningococcal B vaccines.

Conclusion:
Varied vaccine uptake was observed. Multi-dose vaccines were less likely to be completed than single-dose vaccines. Reduced health awareness as patients become accustomed to their post-transplant status may contribute to lower uptake after initial doses. Vaccine cost may also play a role, with no patients receiving the two most expensive vaccines.

Vaccination reduces infection risk in HSCT recipients, who remain vulnerable long after their transplant. Prioritising the delivery of the full schedule and routinely reviewing vaccination status post-HSCT are essential. Local vaccine recommendations should be reviewed in light of updated national guidance. Further data are needed to better understand patterns of vaccine uptake and identify improvement opportunities.

190: Insights into healthcare worker attitudes towards and against COVID-19 and influenza vaccinations in the UK: participants from the SIREN study

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Introduction
Vaccine coverage (COVID-19 and influenza) among UK healthcare workers (HCW) has varied by vaccine and season. We aimed to describe vaccine coverage among HCWs in 2023/24, understand attitudes to vaccinations and strategies for vaccine promotion.

Methods
Using an online questionnaire, we conducted a cross-sectional study between 29 February-22 March 2024 within SIREN, a prospective HCW cohort across the UK. Adjusted odds ratios (aOR) and 95% confidence intervals (CI) from multivariable analyses were used to estimate determinants of vaccine coverage. Proportions of reasons for/against vaccination amongst participants and NHS hospital strategies to enable vaccination were calculated.

Results
In total, 5,357/33,021 eligible participants (16.2%) completed the survey. 66.7% received both vaccines, 12.4% influenza only, 2.4% COVID-19 only and 18.3% neither. Participants were more likely to receive any vaccine if male (aOR=1.42, 95%CI 1.15-1.74), over 65 years (2.72, 1.64-4.53) and with a chronic respiratory condition (1.48; 1.18-1.87). Participants of black ethnicity were less likely to receive any vaccine (0.42; 0.27-0.64).

Main reasons for vaccination were to protect oneself (81.3%), and family/friends (71.2%). The main reason against vaccination was concern about long-term side effects (29.1%). Attitudes varied by occupation where protecting patients were a higher priority for patient-facing roles.

Vaccinations were promoted via hospital intranets (86.3%) and newsletters/emails (79.1%). Accessible vaccine centres (60.6%) and workplace vaccinators (57.2%) were main enablers for vaccination.

Discussion
We observed heterogeneity in vaccine coverage and attitudes across HCWs. Differences in demographics, occupation and attitudes should be considered when planning strategies for vaccination promotion to protect the NHS workforce.

Innovation and knowledge mobilisation in IPC

83: Introduction of artificial intelligence technology-based hand hygiene scanners “HandInScan” to improve hand hygiene education and reduce the risk of spreading infectious diseases at Cambridge University Hospitals NHS Foundation Trust

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Background: Hand hygiene is the cornerstone of infection control and poor handwashing practices is a major contributor to the spread of infection. We trialled an artificial intelligence (AI) scanner to improve hand hygiene standards in our hospital.

Methods: Semmelweis’ “HandInScan” is a device that improves hand hygiene education and aims to minimise the spread of infection. It is uses photographic scanning technology to capture digital images of disinfected hands and results provided are a percentage of the disinfected/missed areas of the user’s hands. Three scanners were evaluated on six wards over a two-week period. A staff survey was also undertaken.

Results: 182 healthcare staff were recruited. 86% (156/182) of participants used the scanner at least once; 43% (67/156) 1-4 times and 64% (68/156) 5 times. We reported an increase in participants who passed the assessment, with a score of ≥95% “shiny paws” over the study period: 46% (72/156) passed on the first four days of the study, while 81% (85/105) passed in the last four. The most frequently missed area was the tips of the thumbs. Highest scoring profession was the domestic staff. A survey conducted revealed 60% (47/79) of participants thought their previous hand cleaning technique was better/ much better than shown by the device. Furthermore, 81% (64/79) were likely/highly likely to modify their hand cleaning technique having used the scanner.

Conclusion: This device provides the Trust with quality assurance data enabling us to maintain a high quality and safe service in line with appropriate standards of best practice.

92: Indoor hygiene concept (IHC) decreases the number of infections and health care costs

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Background: Indoor environment (surfaces, air, water system), and building's lifecycle should be utilized for infection prevention and control (IPC). Additional to conventional methods, IPC could be executed already in construction of a building, e.g., automatic, touchless, and antimicrobial solutions. Contrary to standalone solutions, the effect of a comprehensive indoor hygiene concept (IHC) on microbial load or infections count has not been studied in Living Lab environments. Moreover, the cost-benefit of IHC has never been studied. This novel study will clarify how IHC could reduce morbidity to respiratory and gastrointestinal infections, and thus, costs.
Methods: Suitable pilots (elderly care, kindergarten) identified, IHC solutions installed, environmental microbiological samples taken from intervention and reference wards, and morbidity data of staff and "clients" followed. A cost-benefit analysis performed to determine the costs of IHC versus the costs of infections.
Results: Data collection 3/2023–12/2025. The results provide statistical evidence on how IHC reduces the number of infectious diseases and health care costs. Other outcomes: Living Lab environments, a detailed checklist and guidance of the best practices, technologies, solutions, and products of the comprehensive IHC.
Conclusions: A building should be designed, constructed, and operated so that the infection risk remains within an acceptable, defined level, and suitable to the specific indoor environment (ICU vs. school). This approach could decrease infection transmissions via indoor environments and bring cost-benefits for owners and users of a building, and furthermore to the whole society. Additionally, any innovation to reduce transmissions of infectious diseases indoors is a tool against future pandemics.

222: Introducing waste-water safety in NHS augmented care units to reduce Pseudomonas aeruginosa and Carbapenemase-producing organism risk and water outlet contamination. Experience of Leeds Teaching Hospital NHS trust.

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Introduction

Healthcare water and waste-water systems are recognised sources of Pseudomonas aeruginosa(PA) and carbapenemase-producing organisms(CPOs). The Department of Health HTM-04-01 recommends interventions to minimise risk to patients but 'water safe' care is not currently embedded into clinical or infection prevention practices in NHS augmented care units(ACUs)

Methods

Leeds Teaching Hospitals NHS Trust developed and embedded waste-water safety processes for ACUs between April-2021 and April-2024, including adult/paediatric haematology and 8 critical care units. Interventions targeted; modification of the built environment to minimise waste-water risk, new approaches to 'water-light' and water-safe care delivery and educational materials for all staff. Water outlets were sampled at minimum 6-monthly intervals; additional testing occurred in response to waste-water related infection or positive water results.

Results

Water outlet positivity for PA in the 13 wards fell from 69/957 samples (7.2%) April-April 2019-20, to 12/1270 (0.9%) April-April 2023-24. Two of the ACUs had PA/CPO outbreaks in 2021 (n=25 PA-VIM+ve, n=4 PA-IMP+ve), both outbreaks were controlled following water-safety interventions, with >24 months since the last cases. Clinical, estates and facilities staff learnt water/waste-water safety using face-to-face, online and video training (1440 views).

Discussion

Waste-water safety is a new important aspect of infection prevention in healthcare. Protecting patients requires improvements to the built environment, patient water-exposure pathways and clinical practice. Expertise is needed in diverse staff groups to mitigate risk of PA/CPO acquisition from water and waste-water systems in ACUs.

Conclusion

Delivery of water-safe care can contribute to a reduction in water PA positivity, outbreak control and clinical PA cases.

263: Developing Antimicrobial Surfaces for High Frequency Touch Points in a Hospital Setting– An Innovate UK Feasibility Project through NHS, Academia and Industry collaboration

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Background
Healthcare Associated Infections are a risk to patients, visitors and staff. The bacteria and viruses that cause these infections can be transmitted by contact with a contaminated surface. Existing antimicrobial surfaces exist however concerns persist regarding longevity, appearance and cost.
In order to address some of these limitations, an INNOVATE UK feasibility project was funded to develop copper alloy based antimicrobial coatings by vacuum coating solutions specialists Gencoa Ltd and Diamond Coatings in conjunction with Liverpool School of Tropical Medicine and Liverpool University Hospitals NHS Foundation Trust.

Methods
Novel magnetron sputtered coatings were developed which allowed coating of 2D and 3D components, as well as transparent flexible films. Different copper and other metal alloy combinations were tested at Gencoa and LSTM settings for in vitro testing of antimicrobial efficacy and surface longevity with ESKAPEE pathogens and local site installation. The surfaces with the best combination of antimicrobial effect and longevity were selected for installation in public facing areas of LUHFT. Before and after environmental sampling of surfaces occurred within the hospital environment.

Results
Effective antimicrobial surfaces were identified and successfully installed within the NHS. While the antimicrobial effect persisted, within the hospital environment surface longevity became an issue. Through regular feedback subsequent versions of transparent films and 3D coated surfaces showed improved longevity in field situations.

Conclusion
This feasibility project demonstrated the strength of collaboration to develop surfaces for deployment within the NHS. It has led to improvements in prototype designs and for informing future development of these products.

271: Back to Basics - Role of Hand Hygiene (HH) and Aseptic Non-Touch technique (ANTT) in Cannulation Using the Latest Technology for Safer Better Care

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Introduction
Insertion and management of peripheral intravenous catheters (PIVCs) is one of the most common invasive procedures, performed in up to 100% of hospitalized patients, and PIVCs are critical to the delivery of care. Proper HH is the single most important, simplest, and least expensive means of reducing the prevalence of HAIs and the spread of antimicrobial resistance. Education is crucial for success and represents one of the cornerstones for improvement of HH practices . ANTT is one of the most common and important clinical competencies in healthcare. Poor ANTT and improper securing of cannula are among listed causes of Phlebitis.

Methods
Baseline audits to assess the current practice of ANTT during cannulation process. Devised and distributed ANTT Steps poster. A new patient information leaflet is being given to every patient after cannulation. Education and training were provided to all relevant Health Care Professionals (HCPs) regarding HH and ANTT practice, and it is ongoing.

Results
A multi-modal approach with current practice audit, feedback, education and training, and re-audit resulted in practice improvement and reduction in device-related blood stream infections. This has also improved cannulation experience for patients and enhanced staff satisfaction.

Conclusion
Education and training in the practice of ANTT with pre and post audits, and display of posters have been a great success. The impact of this service with a ‘Back-to-Basics’ approach is apparent with significant improvement in adherence to ANTT practice and HH compliance, reducing the incidence of device-related Staph. aureus blood stream infections.

Outbreaks

107: Transmission of hypervirulent Klebsiella pneumoniae in an UK Intensive Care Unit during the Covid-19 pandemic

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Background: National incidence of Klebsiella Pneumoniae blood stream infection (BSI) increased during the covid-19 pandemic, while E.coli incidence fell. This coincided with increased gram-negative bacterial BSI incidence in our adult Intensive Care Unit.

Method: We audited all gram-negative bacterial BSIs between 13th April 2020 and 25th December 2021. 41 organisms underwent antimicrobial sensitivity testing and genomic sequencing. Notable causative organisms included 16 Klebsiella spp., 4 E. coli, and 4 Pseudomonas spp. isolates.

Results: We recorded low incidence of multi-drug resistant BSI on our unit. A fifth of E. coli and Klebsiella species carried ESBL or AmpC genes and a single P. monteilli carried the IMP-1 gene. At least 3/16 (19%) BSI with Klebsiella spp. were due to likely transmission between patients in nearby beds. Responsible strains included hypervirulent K. pneumoniae ST 412, hypervirulent K. pneumoniae ST 86 and K. aerogenes *002b. Half of all Klebsiella pneumoniae BSI were hypervirulent, having K2 or K57 capsule type and the presence of iuc, iro, Rmp genes.

Discussion: Hypervirulent Klebsiella pneumonia is an emerging pathogen, capable of causing severe, disseminated infection. It is hypermucoid and can adhere to healthcare workers personal protective equipment (PPE) or hospital fomites. Increased transmission may be associated with cohort nursing with long-sleeved sessional-use gowns, shared equipment or environmental reservoirs. We call for review of PPE (specifically consideration of short-sleeved gowns, to facilitate effective hand hygiene) for healthcare workers caring for patients with SARS-CoV-2 and without carriage of carbapenem-resistant organisms.

209: An OXA-48 Klebsiella oxytoca Outbreak in a Nephrology Ward. Blocked Drains?

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We report an OXA-48 K. oxytoca (PFGE: STOKPKL-10; ST:375) outbreak in 32-bedded (four 4-bedded bays and 16 side-rooms) nephrology ward in October-November 2023. On 8th-October-2023, four patients with K. oxytoca (OXA-48) in rectal swab cultures were identified. Total number of patients were increased to 11 by the end of October-2023. Interestingly, many affected patients were in single rooms when they acquired it, suggesting a common source/transmission within the unit. General infection prevention measures were enhanced: single room/cohort isolation, hand hygiene, contact precautions, PPE use, audits, clinical & non-clinical staff training and cleaning checks. A terminal cleaning and steam cleaning with hydrogen peroxide of whole ward was also done on 22 and 29-October-2023. The outbreak persisted, with 18 total colonized cases identified. Of them one was a drain fluid with no clinically significant cases. Six slow draining sinks with a blocked sink-drainage were fixed by 28th-November-2023. Following the remediation of the blocked sinks, no further new CPE cases were detected. Weekly surveillance continued, and outbreak was declared over in April 2024. Overall, 43 environmental samples including mattress, toilet-shower handrails, trolleys, dishwasher, kitchen and toilet panels, pantry wash basin, shower room drain, floor scrubber water tank, brushes, steamer water tank and nozzles came back negative. Not obtaining the samples from blocked sink-drains is a limitation. Ongoing case detection despite multiple rigorous preventive measures and resolving the outbreak after remediation of the drainage system support the built-in environment related outbreak. Regular surveillance for blocked-drains and remediation for prevention of Gram-negative outbreaks is recommended.

251: The story of when it was a Zebra, not a Horse:

Botulism Outbreak Unravels

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A 24-year-old healthy male woke up with sudden onset diplopia, dysarthria, dysphagia, and dyspnea following an uneventful night. He denied prior similar episodes, alcohol, or illicit drug use. Neurologic examination revealed dysarthria, diffuse ophthalmoplegia, impaired vertical gaze, mild left ptosis, and no limb weakness or sensory deficits. His orientation was intact, but he displayed significant anxiety.

Shockingly despite normal vital signs and no respiratory distress upon admission, He quickly deteriorated, necessitating ICU admission and intubation after unsuccessful BIPAP for respiratory failure. Initial CT brain scans showed no acute insults, Further Investigations, including MRI brain, CT angiogram, chest CT, and routine labs and electrolytes, including HIV and hepatitis panels, and CSF analysis were unremarkable.

Initially treated for Myasthenia gravis (MG) with IVIG, the patient's worsening condition and EMG results that were inconsistent with MG prompted reconsideration of the diagnosis. The progression from flaccid descending weakness to total paralysis and respiratory failure, with fixed dilated pupils and normal neuroimaging and CSF analysis, refined the differential diagnosis to botulism, moving away from MG and Guillain-Barre syndrome.
Public health authorities were notified immediately as Botulism became the primary concern, toxin detection assays commenced, and botulinum antitoxin was sourced.
An ensuing city-wide outbreak, linked to a common food source and involving 75 individuals coincided with Confirmation of botulism in our case.

This case underlines the critical nature of maintaining a low threshold for suspicion of botulism, the value of early differential diagnosis, and the imperative of prompt engagement with health authorities to manage potential outbreaks.

Outpatient Antibiotic Therapy

32: Adverse events from fluoroquinolone therapy in a complex oral antibiotic clinic.

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Background
As broad-spectrum antibiotics with favourable tissue penetration and oral bioavailability, fluoroquinolones are effective in many bacterial infections. However, in 2024, the MHRA recommended that systemic fluoroquinolones only be prescribed when other antibiotics are inappropriate due to concerns about serious adverse events. Following this guidance, we assessed the use of fluoroquinolones in a complex oral antibiotic clinic.

Methods
A retrospective audit of data from medical records of patients treated between 01/06/2020 and 30/01/2024 was performed.

Results
Fluoroquinolones were prescribed to 118 patients. This was in combination with other antimicrobials in 47.5% of patients. Treatment duration was ≥4 weeks in 87.3%. Most common treatment indications were necrotising otitis externa (29.7%), prosthetic joint infections (16.9%), and osteomyelitis (16.9%). 91.5% had a positive culture sample, most commonly Pseudomonas aeruginosa (34.7%) and Staphylococcus aureus (37.3%). No alternative oral antibiotics were available in about half (49.2%) of cases. Twelve patients (10%) suffered adverse reactions necessitating stopping treatment, these were communicated to their GP via letters but recording on electronic health records was incomplete or absent. Adverse reactions reported were seizures (n=1), anxiety/palpitations (n=2), gastrointestinal symptoms (n=5), and suspected tendonitis (n=7). Adverse events were more common with higher antimicrobial doses (750mg bd ciprofloxacin) and after 4 weeks of treatment.

Conclusions
In this cohort, most patients were treated effectively with fluoroquinolones without problems but 10% did suffer adverse events, particularly those on higher doses and longer courses of treatment. This highlights the need to consider alternative treatments, particularly in those with other oral antibiotic options available.

86: Elastomeric devices for OPAT : the Bolton NHS Foundation Trust experience.

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[1]Bolton NHS Foundation Trust

Aim
To conduct a review of elastomeric antibiotics usage and outcomes based on Good Practice Recommendations (GPR).

Methods
Data was collated retrospectively for all patients who received antibiotics via pre-filled elastomeric devices over an 18-month period (Nov. 2022 to Apr. 2024). A review of Infection outcomes and OPAT outcomes was conducted to evaluate OPAT service provision across the Trust.

Results
Flucloxacillin, Piperacillin-Tazobactam and Benzylpenicillin were delivered via elastomeric devices to 31 patients for treatment of a range of complex infections. Of these, twenty-one patients (67%) received Flucloxacillin.
A significant proportion of OPAT referrals (74%) were from orthopaedics/surgical specialties. Twenty-one patients were referred for treatment of bone/joint infections, and 52% of these were prosthetic joint infections.
Based on GPR recommendations, the Infection outcome was “cure” in 93% (29/31) cases. Two patients failed OPAT and required re-admission due to worsening infections.
The OPAT outcome was a “success” in 63.6% cases, 19.3% were a “partial success” and there were three (0.09%) failures.
No readmissions due to any adverse event or complications associated with elastomeric device were observed.

Conclusions/Recommendation
At Bolton, implementation of elastomeric devices for OPAT has been a success in conjunction with high cure rates. Overcoming barriers of TDS and QDS dosing, this service has facilitated early discharge of patients.
C.difficile-associated diarrhoea was not reported for any patient.
Use of narrow-spectrum targeted therapy has strengthened antimicrobial stewardship.
Further research is required to expand the repertoire of agents available via elastomeric devices to facilitate early discharge of patients to the community.

170: Complicated infections can be managed safely and effectively in a pharmacist-led complex oral outpatient antibiotic (COPAT) clinic

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Background

In response to increasing evidence of the effectiveness of oral antibiotics in treating complicated infection a pharmacist-led COPAT clinic was established.

Methods

A retrospective analysis of service outcomes of patients treated by the clinic from January 2020 until May 2024 was carried out.

Results

230 treatment episodes were analysed, encompassing 219 unique patients with a median age of 63 years and a male preponderance. Bone and joint infections were most common (63%), followed by malignant otitis externa (11%), skin and soft tissue infections (11%) and intra-abdominal infections (6%). Treatment was complex with a median duration of 40.5 days (IQR 28-62 days), 47% receiving combination antimicrobial therapy, and adverse drug effects leading to treatment changes in 13%. Therapy with Metronidazole, Clindamycin, Linezolid and Rifampicin was most commonly associated with adverse effects. Treatment outcomes were excellent with 89% of infections cured or improved, and failure of COPAT in only 3%. Patients were highly satisfied with the service.

Conclusion

Complicated infections can be treated with oral antimicrobial therapy in a pharmacist-led COPAT clinic in a safe, effective manner with excellent clinical outcomes and patient satisfaction.

275: Burden of obesity in patients with cellulitis on OPAT service

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Introduction:
A large number of patients are routinely referred to the OPAT for management of complicated cellulites from various clinic sites in Cambridge University Hospitals. Anecdotally, members of the OPAT have noted a significant amount of obesity in such patients. This project aimed to define that problem statistically and identify specific challenges in treating such patients.

Objectives and methods:
The objectives from this study was to describe numbers of patients with cellulitis and obesity in the OPAT service, to describe co-morbidities and demographics, to describe antibiotic dosing in cellulitis patients with and without obesity, to describe length of time on antibiotics in cellulitis patients with and without obesity. A manual registry of all patients seen in OPAT over the years is maintained in the trust. Data on patients treated for cellulitis was collected from here and clubbed with patient's electronic medical records to gather additional information needed for the audit. The sample size was derived from number of patients seen on OPAT service for cellulitis between September 2022 and February 2024, which amounted to 96 patients.

Results:
The study found that 93/96 patients referred to OPAT with cellulitis were overweight or obese. Additionally, the duration of antibiotics needed for patients above a BMI of 27.5 was nearly three times as much as BMI <27.5.

Conclusions:
The study found that obesity is a significant factor in causation and subsequent response to treatment for cellulitis. Most patients with cellulitis need long courses of antibiotics and adjacent management compared to non obese population.

Paediatric clinical cases

168: Persistent Meyerozyma caribbica bacteraemia and polymicrobial bacteraemia in a neutropenic child: a multi-disciplinary team (MDT) approach to difficult to treat infection and a rare yeast

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We present the case of a 16-year-old male admitted under paediatric haematology with a relapse of high-risk acute myeloid leukaemia, for management with chemotherapy followed by a bone marrow transplant.

Upon admission he exhibited persistent high fevers in the context of neutropenia, managed with empirical meropenem, amikacin and micafungin. While on this regimen post-transplant, he developed bacteraemia with Stenotrophomonas maltophilia. This was treated with ceftazidime/avibactam plus aztreonam, given concerns about folate inhibitor use. Further blood cultures isolated Vancomycin-resistant Enterococcus and a yeast, which could not be identified in-house. Chest imaging was consistent with invasive pulmonary aspergillosis (IPA) and there were cutaneous satellite lesions suspicious for disseminated fungal infection.

High fevers and profound neutropenia persisted for a period of 10 weeks with surveillance cultures showing persistent growth of all three organisms, despite a change of intravenous access. The reference laboratory identified the yeast as Meyerozyma caribbica, for which there are no EUCAST breakpoints. An MDT decision led to a regimen of liposomal amphotericin, isavuconazole, levofloxacin, cefiderocol and tigecycline to cover the three blood organisms as well as presumed IPA. After 49 positive blood cultures and a second bone marrow transplant, the patient engrafted and cultures became negative.

While bloodstream infections with Candida species and Meyerozyma guilliermondii are well described, we found a lack of literature describing management of Meyerozyma caribbica. This case demonstrates successful treatment of this organism, and that an MDT approach involving clinical teams and other infection specialities can improve outcomes when dealing with difficult to treat infections.

279: An ongoing Challenge: Invasive Group A Streptococcus in Chidlren admitted to a tertiary Childrens Hospital from January 2021 to december 2023

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objectives; To describe the treatment burden and managemnt of invasive Group A Streptococcus (iGAS) in a tertiary paediatric hospital
Methods: Retrospective review of children with iGAs isolated from a sterile site
Results: 49 case records were reviewed; age 1 month to 15 years (median 3 years); 56% from areas in the most deprived quintile
26 childrenhas evidenceof concurrent or revent viral infection, including 12 with varicella. Lowre respiratory tract infection accounted for 40% of cases; 24% skin & soft tissue;9% Bone and joint. 28 chidlren were documented to have presented with presumed sepsis; 13 chidlren were admitted to intensive case . Duration of hospital stay was 1-188 days (median10 days) Two children died; 2 had signficiant sequelae including limb amputation in one
Antibioitc duration ranged form 1-105 days (median 35 days) Clindamycin was co-administered in57%, with a durationof 1-27 days(median 8.5 days). Five patients recieved IVIG. Despite evidence of iGAS 18/21 childrenwith pleural empyaema were discharged on oral co-amoxiclav.
Conclusion:iGAS reamisnan important cause of morbidity, mortality and treatment burdenin chidlren despite appropriate management. The previously described association with recent viral infection including varicella was seen, Introduction of varicella vaccien may reduce overall incidence of iGAS but signficant morbidity and mortality are likely to remain. In addition there is scope for further rationalisation of antibitoitic treatment in our hospital when iGAS has been identified as the causative pathogen

Quality improvement

12: Incidence of Bacterascites and Spontaneous Bacterial Peritonitis (SBP) in Day case Unit Attendance At a Tertiary care Teaching Hospital

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Introduction
Microbiology laboratory receives ascitic fluid samples from day-case units for patients undergoing elective drainage of ascites for symptomatic relief only. These grow organisms of no clinical significance.

Aims
The aim of this audit was to find out the incidence of bacterascites and SBP in the ascitic fluid samples sent from the day-case unit, yield from blood culture bottles, pathogens detected and correlation to symptoms.

Background
SBP is an infection of ascitic fluid in the absence of any intra-abdominal, surgically treatable source of infection. Also defined by ascitic neutrophil count > 250/mm3 or total ascitic white cell count >500mm3.
Bacterascites may represent a transient and spontaneously reversible colonisation of ascites but for those who are symptomatic, it may herald SBP. In bacterascites, the ascitic neutrophil count is <250mm3 but with a positive fluid culture.

Method
All ascitic fluid samples sent from day unit from February 2023 to July 2023 were reviewed using trust's databases.

Results
A total of 353 ascitic fluid samples were received, only 19 were culture positive. None of these patients had symptoms of SBP. None of the samples had neutrophils >250/mm3. Only one sample had leucocyte count >500/mm3. All positive samples mainly grew Coagulase negative Staphylococci 74% followed by gram positive bacilli 11%, Streptococcus oralis 5%, enterococci 5% and mixed species 5%

Conclusion
We may be able to decrease the burden for laboratories by sending a sample for a cell count only from elective asymptomatic patients and performing a culture if the cell count is high.

21: The Challenge! – Alignment of Urinary Tract Infection (UTI) antimicrobial guidance in an electronic prescribing system (EPS) at University Hospitals of Birmingham (UHB).

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Introduction:

Gram-negative bacteraemia is a serious potential sequalae of a urinary tract infection (UTI). Consequently, prompt and effective therapy of UTIs is essential. Baseline audit of UTI treatment at University Hospitals Birmingham (UHB) conducted between September and December 2021 showed high empirical use of trimethoprim and 40% adherence to guidelines for correct drug and duration. Escherichia coli is one of the most frequently cultured micro-organisms from urine sample however local resistance of more than 50% has been observed.

UHB antimicrobial guidelines recommends empirical UTI treatment with nitrofurantoin 100mg bd for 3 days in women and 7 days in men.

Users of ePMA systems frequently report alert fatigue therefore a novel solution was sort to guide prescribers to the preferred prescription. To support guideline adherence a novel digital tool was developed within the electronic prescribing and medicines administration (ePMA) system.

Method:

The digital tool pulls demographic and clinical data held within the ePMA to propose the antimicrobial therapy for prescription. The result is a prescription that is tailored for patient sex and renal function. Over-ride of the tool is possible following input of the prescriber's password.

Results:

Re-audit of UTI guideline adherence between July to September 2022 demonstrated 95% compliance. Also noted-

- 90% compliance with correct drug, increased from 44%.
- Compliance for correct drug and duration increased from 40% to 88%.

Conclusions:

This project demonstrates the use of digital tools within the ePMA that are relevant to the user can prompt guideline adherence and antimicrobial stewardship

23: Using machine learning to understand antibiotic prescribing: a reproducible analytical pipeline in R

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Background
Electronic Prescribing and Medicines Administration (EPMA) systems hold large amounts of data. This data can be useful for antimicrobial stewardship, but only if it can be interpreted. Antimicrobial prescriptions with free text indications are a challenge due to the variety of ways a disease condition can be expressed, misspellings, and the use of acronyms. Natural language processing (NLP) is a machine learning methodology which can be used to convert this raw data into actionable knowledge and support antimicrobial stewardship.

Aim
This project aims to design a reproducible analytical pipeline that uses NLP to analyse free-text antimicrobial prescriptions. The goal is to classify these prescriptions into predefined categories based on the suspected source of infection.

Methods
74,134 free-text antimicrobial prescriptions were extracted from a tertiary centre EPMA. Data analysis was performed in R (version 4.3.1), which is supported by the NHS. Supervised gradient boosted tree NLP models were trained to classify antimicrobial indications.

Results
Antimicrobial indications were classified into 17 categories including urinary, abdominal, respiratory, and soft tissue sources, as well as conditions such as diabetic foot infections, osteomyelitis and concepts such as sepsis and antimicrobial prophylaxis. The mean area under the curve (AUC) was 0.98, indicating excellent discrimination.

Conclusions
Natural language processing can be applied using a reproducible analytical pipeline in R to classify antimicrobial indications, with excellent discrimination. These classified antimicrobial indications provide insight into prescribing behaviours and can be linked to administration data and microbiological samples to understand hospital treatment of infections on a large scale.

24: Use of point-of-care viral respiratory panel testing in acute paediatrics at a district general hospital: a quality improvement project

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Introduction:
Respiratory conditions are a common presentation to hospital paediatric departments, with incidence of around 300,000 cases of upper respiratory tract infection per 100,000 children under 5 per year in the UK. Improved access to viral testing could reduce antibiotic usage and inpatient stays of patients with viral upper respiratory tract illness.

Methods:
Paediatric patients under 5 presenting to Wexham Park Hospital with respiratory symptoms, who underwent standard viral testing (one or more of SARS-CoV-2, FluA, FluB and RSV) were identified from a prospectively kept database in 2022. This baseline group was compared to a comparator group with the same presentation, in the same season in 2023, who underwent point of care BioFire Respiratory panel testing. Data was gathered relating to demographics, viral results, antibiotic usage and inpatient stay.

Results:
Demographics were similar, with mean ages 1.4 and 2.5 years in 2022 and 2023 respectively. There was, however, a difference in the number of patients in the baseline (46) and comparator groups (11). In the baseline group, less had positive viral results (22% compared to 82%), with more inpatient stays (65% compared to 25%). Although antibiotic usage was similar (57% compared to 63%), less of the baseline group had just one antibiotic dose (4.3% compared to 38%).

Conclusions:
Viral panel testing has the potential to reduce inpatient stays and antibiotic usage. There is, however, a need to assess these outcomes on a larger scale in a district general hospital setting to fully assess the viability of high throughput viral testing.

35: Contribution of hand hygiene coordinators to better hand hygiene compliance - an example of good practice

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Objectives: Hand hygiene is one of the most efficient measures for infection prevention.
Methods: With hand hygiene interventions we started in 1999; we made written instructions, wall reminders, determined disinfection points and wrote requirements to choose appropriate disinfectants. We educated employees about importance and advantages of hand rubbing. In 2008, first two observers were educated. Later, they were included in performance of national education program for first Slovene observers. At that time we educated more observers and hand hygiene became one of the quality indicators. We upgraded the area with comparison with other quality indicators, introducing the culture of mutual warnings, performing self-assessment framework… The last measure was introducing “hand hygiene coordinators” to each ward.
Results and discussion: Interventions turned out as good practice as coordinators are not just observers. With information, acquired during observations, they actively participate with measures for increasing the compliance, directed towards individual moments (indications). This way we noticed opportunities with “clean / aseptic moment” (established compliance 77%). That is why we introduced additional reminders for places, where such interventions take place. We also exposed the results and possibilities for improvement on ward meetings. On next valuation, our compliance increased to 94%. With coordinators, we also try to low the impact of Hawthorne effect, which occurs with direct observation, because their observations are often unnoticeable and therefore results more realistic.
Conclusion: Coordinators are included into work procedures even today. Furthermore we intend to increase their activities and include them in a hospital infection prevention group.

43: Malaria in East London (2018-2022): a retrospective review and quality improvement project

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Malaria is a serious but preventable infection caused by the Plasmodium parasite. Annual imported UK case numbers range typically range between 1,000 to 2,000 cases per year [1].

Methods

We conducted a retrospective observational study of all patients diagnosed with malaria between 2018 and 2022 in Barts Health NHS Trust, a multi-centre trust covering the majority of East London. Information extracted from electronic health records includes demographic, clinical, treatment and outcome data.

Results

A total of 244 patients were identified. The majority were young (median age 45 years), Black or Black British (77.0%), travelled to West Africa (77.9%), and were visiting friends or relatives (76.2%). Very few patients took any form of chemoprophylaxis (24.2%) and fewer (4.1%) took adequate chemoprophylaxis. Most (91.8%) had falciparum malaria, with mean parasitaemia 2.0%. More than a third (36.9%) had clinically severe malaria. Most (65.2%) were admitted, with median length-of-stay 3 days. There were no deaths. We are undertaking quality improvement work to improve time from diagnosis to administration of anti-malarial medications (median 6 hours, IQR 3h4m to 10h37m) and number of patients attending ID clinic follow up (36.1% were not referred, 11.9% did not attend).

Conclusion

We present a large detailed retrospective analysis of patients with malaria in East London. Work to improve malaria care within the trust is ongoing at time of submission and we aim to present post-QI data at the conference. Further work to improve uptake of chemoprophylaxis is required.

References

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48: Prioritising different modalities of imaging in the diagnosis of endocarditis in Staphylococcus aureus bacteraemia.

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[1]North Bristol NHS trust

Background: Staphylococcus aureus bacteraemia (SAB) is a serious bacterial infection with a significant mortality. In patients with confirmed SAB, there is always clinical concern for dissemination to heart valves, resulting in infective endocarditis (IE). This was a retrospective cohort study from 01/01/2023– 31/12/23 of all cases of SAB within North Bristol NHS Trust (NBT), aiming to assess the appropriate and timely investigation of suspected IE in keeping with national guidance.

Method: This project was the fourth Plan-Do-Study-Act cycle in a quality improvement series. The recommendations implemented by previous cycles were assessed and results of cases of SAB, the time to echocardiogram, use of other imaging modalities and mortality were compared to previous data collected in 2019 and 2011.

Results: 114 cases of SAB were identified within NBT, with 17 imaging confirmed cases of IE; using transthoracic echocardiogram, transesophageal echocardiogram and PET-CT. The time to initial echocardiogram has increased, compared to previous years, with fewer patients receiving imaging within 24 hours of IE suspicion. Access to transesophageal echocardiogram and PET-CT appears to have improved.

Discussion: Our results demonstrate a significant proportion of patients with SAB are not receiving timely imaging investigation in line with national guidance. The delay to echocardiogram has increased since the previous years audited. A delay in detection of IE can affect mortality. Improvement in the provision of PET-CT has aided the diagnosis of disseminated infection in SAB. We explore the local and national factors which may have contributed to the observed change in the inpatient imaging service.

52: To determine the timely switch to an oral antibiotic agent using the developed intravenous-to-oral switch (IVOS) toolkit.

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Introduction:
This audit aimed to definitively assess the appropriateness of IVOS switching in the acute medicine unit and the wards for the care of older people. It is crucial to understand that switching from intravenous to oral antibiotics (IVOS) holds undeniable benefits for the patient, multidisciplinary team, the hospital, and the environment. These benefits include reduced nursing time required to prepare intravenous infusions, decreased length of stay, and the mitigation of single-use plastic consumption.

Method:
A retrospective audit of the most prescribed antibiotic, Co-amoxiclav, was undertaken from November 2022 to March 2023. Eligibility was determined if the formulation was intravenous. The appropriateness of IVOS was assessed by assessing whether patients were afebrile for 24-48 hours, able to take oral medication, clinically improving, and not suffering a deep-seated infection.
The audit sample size was 60 patients. The interventions were recorded using a data collection tool.

Results:
Of the 60 patients reviewed, 43% (n-26) met the criteria, whereas 57% (n-34) of the prescriptions were non-compliant.
10% of the not switched to oral form should have been switched. 15% of prescriptions were switched oral on clinical judgements, although they were reported to have raised inflammatory markers.

Conclusion:
The audited performance showed that compliance with the IVOS checklist was inadequate. Education for nursing colleagues, foundation years pharmacists, and doctors will be required to improve compliance. The development of an easy-to-access tool on the antimicrobial guidelines and an App would be beneficial, too.

59: Frequent use of the wrong blood culture system in older children and adolescents

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Introduction
Blood culture systems have been developed for use in young children with an optimised culture medium and blood-broth ratio. How the BacTec Peds Plus system is used in practice was reviewed.
Methods
Over 33 months the type of blood culture system used in children was retrospectively assessed. Criteria for optimal blood culture volume were pre-defined and the proportion of children for whom the Peds Plus system was used measured. For five months in 2022, Peds Plus bottles were weighed on receipt in the laboratory and an assessment of the volume of blood incubated made.

Results
Virtually all blood cultures samples from children under four were in suitable Peds Plus bottles. Those from children aged 5-9 were rarely (3%) of a type or number to contain a suitable volume of blood. Due to inappropriate use of Peds Plus bottles only 15% of children aged 10-15 were deemed to have had suitable volume of blood cultured.
Using the average weight of inoculated blood culture bottles from infants as a baseline, when using the PedsPlus system the average estimated volume of blood cultured from older children was an additional <0.12ml per Kg of child weight.
Conclusions
Blood culture volumes for children up to 60 months can be accommodated in the PedsPlus system. In older children, multiple Ped Plus cultures or a two-bottle system should be used. Even where the PedsPlus system is appropriate, one must ensure suitable culture volumes are drawn especially where relying on the inbuilt vacuum to draw blood.

66: How and why do healthcare workers use gloves in two Norwegian nursing homes ?

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Background and aim
Improper glove use, including unnecessary, prolonged use, and neglecting hand hygiene, can lead to environmental contamination and infections. Overuse of gloves is an unnecessary environmental burden that should be reduced in accordance with the UN's sustainability goals.
The study aimed to understand healthcare workers' attitudes towards glove use and identify barriers and facilitators, as well as compliance with national guidelines.

Methods
The small-scale study was conducted at two nursing homes in Oslo Municipal in winter 2023. Twenty-four healthcare workers participated. Observations were recorded using the Norwegian web tool 'National Tool for Observing Infection Prevention Measures in the Health Service' (NOST).
Data from NOST were compared with qualitative data from focus group interviews. The Systems Engineering Initiative for Patient Safety model (SEIPS) was used to analyse the impact of the work system on processes and outcomes.

Results
Of 73 glove-related incidents (67 with gloves and six should have been used), only 47.1% complied with guidelines. The most common mistake was skipping hand hygiene after doffing gloves. Gloves were mainly donned for self-protection and timesaving. The decision to use gloves was influenced by social norms, knowledge, experience, and task-specific factors.

Conclusions
The study confirms that gloves are often used unnecessarily. The decision to use gloves is influenced by social norms, knowledge, experience, and task-specific factors. Reducing glove overuse is vital for better infection control, fewer sore hands, lower healthcare costs, and environmental sustainability. Implementing NOST can help identify local measures to increase compliance.

70: Pseudomonas peritonitis in patients on peritoneal dialysis: Implementing the ISPD 2022 guidelines

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Peritonitis associated with peritoneal dialysis is a cause of significant morbidity and mortality in the renal patient population. Pseudomonas peritonitis is usually severe and has a lower cure rate than other infections, with up to 50% failing treatment. Peritoneal dialysis catheter removal is associated with a higher chance of returning to peritoneal dialysis, and a lower risk of death, however there is often a reluctance to remove the catheter early despite guidelines advising this. We performed an audit in our renal department, a tertiary referral centre for renal medicine, to compare our practices to the International Society for Peritoneal Dialysis (ISPD) 2022 guidelines, specifically in relation to cases of Pseudomonas culture positive peritonitis in peritoneal dialysis patients between 2014 and 2022. ISPD guidelines advise early catheter removal in patients with Pseudomonas peritonitis. We found that only 22.5% of our patients who did not have their catheter removed achieved medical cure, and over 70% of those patients had non-aeruginosa Pseudomonas spp. infections. We additionally looked at patients with exit-site infections – ISPD guidelines recommend catheter removal in these patients, and our data confirmed that all patients with concomitant signs of exit-site infection, or positive exit-site swabs, went on to require catheter removal if not removed early. Our data shows that early catheter removal should be considered and prioritised in patients with Pseudomonas peritonitis, and is particularly important in patients with Pseudomonas aeruginosa, and those with exit-site infections.

74: Implementation of Boric Acid Urine Containers for Diagnosis of Urinary Tract Infections to Improve Diagnosis of UTI - A Single centre quality improvement project

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Background: Urine cultures are one of the most frequently requested tests in acute hospitals. NICE guidelines recommend boric acid containers for urine samples that cannot be cultured within 4 hours of collection. We conducted a trust-wide Quality improvement project to increase the use of boric acid containers for urine specimens collected in a district general hospital.

Methods: We employed a behaviour change method aligned with the B-COM framework to increase uptake. Alongside improving access to appropriate containers, our project included creating and distributing posters, group educational sessions, one-to-one teaching, presentations at departmental meetings, and Intranet posts. Data were obtained from the microbiology department at Health Services Laboratory (The Halo building, London). The primary objective was to increase the use of boric acid-containing tubes for urine sample collection compared to standard universal containers.

Results: A total of 21,208 samples were sent for urine MCS between July 2023 to April 2024. The proportion of urine samples sent in boric-acid containers increased significantly from 37% in the pre-intervention period to 69% in the post-intervention period ($p<0.001$). The largest effect was observed in the emergency department, critical care, and the acute medical unit. This increased uptake was associated with a concomitant decrease in the percentage of isolates with mixed growth (27% to 14%).

Conclusion: A multimodal behaviour-change approach, with sustained education, can lead to a successful and sustained increase in the use of appropriate urine containers and reduce the burden of mixed-growth. Further studies to identify the key factors underpinning behavioural change are planned.

89: Improving blood culture volume and time to incubation: a multi-cycle Quality Improvement Project and process mapping exercise

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Background

Inadequate blood culture volumes and delays to incubation can significantly affect blood culture sensitivity and subsequently may lead to worse patient outcomes. Following the guidelines recently introduced by NHS England, we established a local Quality Improvement Project aimed at improving blood culture volumes and reducing time to incubation in the laboratory pre-analytical phase.

Methods

We conducted a baseline survey of blood culture volume, time to incubation, reporting and arrival method. Four cycles of data collection were performed following staff communications, educational sessions, surveys of attitudes and a process mapping exercise. Data were analysed in R.

Results

Baseline culture volumes across all clinical areas were a median of 5ml (IQR 1 – 10ml), 54/80 (68%) of culture volumes were < 8ml.Following three further Quality Improvement cycles median blood culture volume increased to 8ml (IQR 7 – 10ml, p< 0.001). 30/110 (27%) culture volumes were < 8ml. Baseline median time to incubation was 9.6 hours (IQR 2.9 – 14 hours); there was no significant improvement in time to incubation across cycles. Cultures taken in-hours (weekday 0900 – 1700) had a significantly shorter time to incubation (median 7.3 (2 - 13) vs 12 (8 – 15) hours). The largest improvements in volume were seen in the Emergency Department and Intensive care.

Conclusions

A Quality Improvement Project significantly improved average blood culture volume. A majority of cultures had prolonged time to incubation and this effect was most notable out of hours. Process mapping demonstrated a need for expanded access to culture incubation out-of-hours.

93: New Tool for Observation of Infection Prevention Measures in Healthcare (NOST)

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Background

In 2019, the Norwegian Ministry of Health developed a national action plan for improving infection control, stating:
The Norwegian Institute of Public Health (NIPH) shall develop a national standard and electronic solution for observation.
All hospitals are to use the solution according to the standard and all nursing homes are encouraged to use it.

In addition to a module for hand hygiene observation, NOST includes: a module for må fobserving rings, wristwatches, and fingernails (“bare below the elbow”), a module for observing gloves, and a module for observing PPE.

From 2023, systematic training and implementation of the solution were initiated in hospitals, and from 2024 in nursing homes in one large municipality (pilot).

Organization

NOST can be used free of charge for all parts of the Norwegian healthcare, including training and support.

It is a requirement that all observers and coordinators are certified (approximately 8 hours course).

The national template expects hospitals tertiary to submit 150 observations.

NIPH publish reports three time a year: Handbook for NOST.

Experiences

Currently, 17 (out of 60) hospitals and 8 nursing homes report systematic observation of hand hygiene compliance using NOST.

Observed hand hygiene compliance after one year with observations (2023) is higher than expected, around 75 % (N=6959).

The solution works very well. It is intuitive and easy to use.

In the fall of 2024, a quantitative and a qualitative study will be conducted on factors that promote and inhibit the implementation of systematic observation of hand hygiene with NOST.

105: Underfilled Blood Culture Bottles: A Missed Opportunity in Sepsis Management?

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Background:
Blood stream infections (BSI) are associated with considerable morbidity and mortality. The most significant factor affecting the clinical value of blood cultures is volume: there is a positive correlation between blood culture volume and isolation of clinically significant organisms; studies report a 3% increase in organism isolation per additional mL of blood cultured. NHS England's blood culture pathway recommends that each bottle should be filled with 8-10ml of blood 1.

Aim:
To evaluate blood culture fill volumes at Newcastle Upon Tyne Hospitals.

Method:
We manually audited 189 blood cultures for fill volume, growth, and suspicion of contamination.

Results:
Forty-three percent of blood culture bottles were underfilled. Organisms were isolated from 10% of correctly filled bottles, in comparison to only 6% of underfilled bottles, demonstrating an increased yield with larger blood volumes. The rate of suspected contamination between correctly filled and underfilled bottles was similar at 3% and 4% respectively.

Discussion:
Underfilling of blood cultures hinders the process of identifying pathogens causing sepsis and antibiotic susceptibility testing. Our 43% underfill rate highlights a critical area for improvement. To address this, we implemented electronic pop-up notifications and automatic feedback on fill volume for clinical staff in June 2024. Repeat audits are ongoing to assess the effectiveness of these interventions.

References:
1. Hill, S. (2022) Improving the blood culture pathway – executive summary, NHS choices. Available at: https://www.england.nhs.uk/publication/improving-the-blood-culture-pathway-executive-summary/ (Accessed: 25 June 2024).

116: COPD Prevention of exacerbation toolkit (COPD-PET) pilot

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Background:
COPD is a priority in NHS England's Core20PLUS5 tackling health inequalities and is associated with significant antibiotic consumption. NICE and GOLD COPD guidance highlight the importance of exacerbation prevention. The COPD-PET is a step-by-step checklist with embedded patient support links for conducting a focused clinical review aimed at COPD patients with an elevated risk of antibiotic exposure, adopting principles of prevention, self-care and antibiotic stewardship to reduce risk of deterioration.
Aim:
To assess the use of COPD-PET in clinical practice by PCN pharmacy staff, collect patient feedback and outcomes. Methods:
Pharmacy staff were trained using the 'How to review....' resources on TARGET and COPD-PET. Patients were identified (coded for COPD and >2 antibiotic courses in previous 12 months), reviewed using the toolkit and surveyed after consultation.
Results:
79 patients reviewed, baseline data collected: smoking and vaccination status, antibiotic courses and hospital admissions, MRC score and pulmonary rehabilitation uptake. 24 patient survey responses (30%) 100% respondents felt 'very involved' to 'extremely involved' in their care 90% of respondents would recommend this service to friends and family Top 5 aspects of COPD management patients thought would benefit included: How and when to use rescue packs (79%), role of antibiotics (79%), what to do when you have a flare up (70%), role of steroids (70%), how and when to use your inhaler (67%). 6 month review data from July is compared to baseline data.
Discussion:
Feedback from patients and staff was positive. The PCN have embedded this review into routine COPD care.

142: Improving the management of infective endocardits in a London district general hospital: formation of a local multidisciplinary team and implementation of an improved patient pathway

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Infective endocarditis (IE) presents significant challenges due to its high morbidity and mortality. Early diagnosis and treatment are pivotal in ensuring positive outcomes. The European society of Cardiology (ESC) guidelines for IE recommend establishment of a joint cardiology and microbiology multidisciplinary team (MDT). In our London district general hospital, we established a local MDT including consultant cardiologists, microbiologists and an antimicrobial pharmacist to strengthen inter-specialty communication to facilitate prompt investigation and treatment of patients with suspected IE. We published empirical IE guidance on the trust MicroGuide application in March 2023, providing clinicians with a step-by-step guide on IE diagnosis and management. Guidance and changes in practice were disseminated via post-graduate medical education communication channels and departmental meetings. As a result, all suspected IE patients were physically reviewed by a cardiologist and microbiologist/infectious disease specialist, with additional antimicrobial pharmacist input. Our interventions saw a reduction in local mortality rates from 57% to 27% between January 2023 and February 2024 in patients with Duke's criteria-definite or -possible IE. The proportion of patients undergoing transoesophageal echocardiograms (TOE) increased from 29% to 45%, with 80% confirming a vegetation despite the procedure not being locally available. These results may not be directly attributable to the establishment of the MDT, but the MDT has been instrumental in ensuring investigation and management of patients with IE are prompt.

145: Adapting sampling collection methods for research: Participant insights from the SIREN study

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Introduction

There are known barriers to engaging and retaining research participants in studies that require biological sampling. We evaluated the overall experience of participants within the SIREN study, a prospective cohort of healthcare workers in the UK, and described participant feedback regarding sampling processes for COVID-19 testing.

Methods

We conducted descriptive analysis using responses from a structured online questionnaire. We collected insights on the acceptability of at-home vs at-hospital PCR and blood sampling (finger-prick vs phlebotomy).

Results

Out of 5,970 eligible participants, 2,816 (47%) responded to the survey in April 2024. Three quarters of all respondents reported a preference for home-based (74%) compared to hospital-based PCR sampling and 96% reported a willingness to undertake at-home PCR sampling in future studies.

1,279 (45%) respondents used a finger-prick method for blood sampling at home. Of these, most felt the kit instructions provided were easy to follow (76%) and the device was easy to use (61%). 95% could get a blood sample after the first attempt and half preferred this method to phlebotomy (52%). 96% reported they would be willing to undertake at-home blood sampling in future studies.

Regarding their overall experience, 78% felt more reassured about their infection status by being tested regularly and 82% were more likely to participate in future studies following their participation in SIREN.

Discussion

Home-sampling for PCR and serological testing was acceptable and feasible in this cohort. Clear communications, easy-to-use devices and ensuring participants feel valued are strong facilitators to high uptake, and on-going study retention.

153: Audit on effect of rapid ESBL testing on the quality of care of patients with Extended Spectrum Beta-lactamase (ESBL) producing gram negative bacteraemia

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Background & Objectives: The rapid detection of ESBL in gram negative isolates is a diagnostic and therapeutic priority to avoid inefficacy of the antibiotic regimen in patients with gram negative bacteremia. The department of microbiology had introduced the rapid ESBL(R-ESBL) testing directly on blood cultures growing gram negative bacilli since the 2018, using MAST Combi discs. The method was validated internally on blood cultures and continued with regular QC. This study assesses the impact of R-ESBL testing on the quality of care in patients with gram-negative bacteraemia, focusing on the time to antibiotic change, frequency of antibiotic modification due to R-ESBL test results, and 30-day mortality outcomes.

Methods: Data were collected from patients with gram negative bacteraemia from December 2016 to December 2017 and from December 2020 to December 2021, prior and after the introduction of R-ESBT test, using the Laboratory Information Management System and Electronic Patient Record. The data included blood culture positivity, empiric antibiotics, rapid ESBL results, ESBL confirmatory results, antibiotic changes, final diagnosis, and 30-day mortality.

Results: Introduction of R-ESBL testing showed a significant reduction in the time to antibiotic change from an average of 24.3 hours to 7.3 hours. 43.7% of patients had their antibiotics changed due R-ESBL test results. The 30-day mortality rate in patients with ESBL bacteraemia decreased from 23.7% to 18.7% following the implementation of R-ESBL testing.

Conclusion: The implementation of R- ESBL testing significantly improved the quality of care for patients with gram negative bacteraemia, notably the time to optimal antibiotic therapy.

179: Impact of Source Identification on 28-Day Mortality in Staphylococcus aureus Bacteraemia: A Retrospective Audit

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Objectives:
Staphylococcus aureus bacteraemia (SAB) is significant infection due to its high mortality rate, often leading to deep-seated and metastatic infections. We aimed to investigate the general characteristics of SAB patients and assess whether source identification affects 28-day mortality.
Methods:
We conducted a retrospective audit in patients with SAB admitted to the UHNM between 2022-2023. Identification of the SAB source was assessed using the electronic patient records. Univariate and multivariate analyses assessed predictors of 28-day mortality adjusting for age and comorbidities.
Results:
A total of 327 patients with SAB were included. Source of infection was identified in 169 patients (52%). The 28-day mortality was 23%. Patients without identified source had a higher mortality rate (35%) compared to with identified source (12%), multivariate analysis showed OR of 3.2 (95% CI 1.7-5.9, p<0.001). Hospital-acquired SAB had a higher mortality rate (41%) compared to community-acquired SAB (20%), with an OR of 2.3 (95% CI 1.1-4.8, p=0.026). In patients who survived more than 5 days, those with an unidentified source of infection had a higher mortality rate, with an OR of 2.0 (95% CI 1.1-3.5, p=0.013).
Discussion:
Identifying the source and hospital-acquired SAB are pivotal for patient outcomes. At UHNM, we have a dedicated bacteraemia team, and in 2024, we implemented a blood culture follow-up system that monitors SAB cases on days 5-7 and days 10-12 of bacteraemia.
Conclusion:
The implementation of a structured blood culture follow-up system with a dedicated team providing bacteraemia service at UHNM aims to improve the SAB patient outcomes.

186: Implementation of a prescribing e-calculator to improve gentamicin prescribing at Oxford University Hospitals NHS Foundation Trust

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Gentamicin, an aminoglycoside antibiotic, is dosed on adjusted body weight. If overdosed, it can cause ototoxicity or nephrotoxicity. An audit of 50 gentamicin prescriptions in January 2022 showed that only 18% of prescriptions were prescribed correctly, and 58% of patients received an overdose, primarily because the body weight was used to calculate the dose. The objective of this project is to improve the quality of the gentamicin prescribing.

Methods

A gentamicin dosing calculator was developed and integrated within the trust's Cerner electronic prescribing system. This calculator automatically calculates adjusted body weight, caps the maximum dose at 480mg, and rounds the dose to the nearest 20mg. The appropriateness of gentamicin prescriptions was retrospectively reviewed by antimicrobial stewardship (AMS) pharmacists. A separate online calculator was used to verity the calculated adjusted body weight.

Results

361 gentamicin prescriptions were reviewed over a 3-month period. Of these, 78% were prescribed correctly.

The calculator was used in 236 (65%) of the prescriptions, with 30 (12.7%) deemed inappropriate due to incorrect selection of the target dose and prescribers manually adjusting the calculator's parameter.

The calculator was not used in 124 (35%) cases, with 50 (40.3%) of these prescriptions being inappropriate.

Conclusions

There was a significant improvement in gentamicin prescribing. Prescribers were three times more likely to prescribe gentamicin incorrectly when the calculator is not used. AMS will continue to audit gentamicin prescribing to ensure ongoing improvement and accuracy.

Further discussion with the e-prescribing provider is needed to determine if design changes could enhance the calculator's effectiveness.

197: A practical approach to penicillin allergy de-labelling in adult patients in the Royal Devon and Exeter Hospital; our experiences of using the PEN-FAST scoring system and lessons learnt

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Introduction

Approximately 6% of people have a penicillin allergy label but over 90% of them do not have a true penicillin allergy. Penicillin allergy labels are associated with higher mortality rates and a greater risk of antibiotic-resistant/healthcare associated infections.

Given the paucity of UK allergy specialists, district general hospitals (DGHs) should look to establish penicillin allergy de-labelling services. Our centre has established a pathway using the PEN-FAST scoring system; demonstrated to be a safe way to identify low-risk patients and subsequently undertake direct oral penicillin challenges. We present our data set upon penicillin challenges undertaken using this pathway.

Methods

We undertook our trial on a surgical ward February-June 2024. Eligible patients were identified by the ward pharmacist. Penicillin challenges/follow-up were undertaken by a dedicated clinical team. Procedural paperwork was written in accordance with BSACI guidelines and the PALACE randomised control trial.

Results

10 patients with a PEN-FAST score 0-2 received penicillin challenges. There were no immediate severe or delayed reactions. Patients were followed up approximately seven days post challenge. 90% have been de-labelled on hospital records and 80% on GP records. 1 patient was lost to follow-up.

Our presentation will include reflections upon lessons learnt and future plans.

Conclusion

Our work demonstrates that the PEN-FAST scoring system is an effective way to safely assess patients with penicillin allergy labels for consideration of oral penicillin challenges and de-labelling. We encourage other DGHs to consider utilising this approach to optimise patients' antibiotic choices and promote good antimicrobial stewardship practice.

201: Review of high white cell count cerebrospinal fluid microscopy samples and actions taken by clinical microbiology – Is urgent microbiology advice required for all positive CSF microscopy?

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Background:
Currently at Cambridge University Hospitals NHS trust the standard operating procedure for cerebrospinal fluid (CSF) microscopy is all samples with white cell count (WCC) of >5 x10^6/l are urgently reviewed by a clinical microbiologist. The microbiologist will review and advise the clinicians if required.
This policy applies 24 hours/day. If the non-resident on call microbiologist is called and has not received at least 5 hours of continuous rest they are unable to work a full shift the next day, sometimes leading to understaffing. Our question was if the CSF policy was improving patient care or whether this duty could be deferred with no harm to patients.
Methods:
We audited 200 CSF samples collected between April 2023 and April 2024. These results and contemporaneous patient notes were reviewed by clinical microbiologists to determine if advice was given and if it was time critical (i.e. action should be taken within 2 hours). For circumstances where advice was time critical a further review was undertaken to determine if the advice was already in local policies.
Results:
Advice from microbiology was documented in 71 cases, most often to start antimicrobials or suggest further investigations. In 17 of the 71 episodes the microbiologist changed management in time critical circumstances. Of those 17 episodes all advice given was present in existing guidelines.
Summary:
Urgent microbiologist review of CSF results did not change management beyond following guidelines. If guideline adherence is high this service could be safely withdrawn enabling more efficient clinical microbiology working patterns.

205: Mapping the cascade of care for people with positive IGRA results: a descriptive single-centre analysis

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In low-TB-incidence countries, the interferon gamma release assay (IGRA) plays a key role in screening for TB infection prior to immunosuppressants, and in new entrants and contacts of people with active TB. However, there is little guidance on appropriate use of IGRA testing and wide variation in understanding the indications for and results of IGRA tests.
The cascade of care from a positive IGRA result to TB preventive treatment (TPT) is vital. If the result is not actioned appropriately, this can lead to preventable morbidity and mortality associated with active TB disease. However, many people are lost at each step in the cascade from screening to treatment.
This study describes the cascade of care for the cohort of people with positive IGRA results at Oxford University Hospitals NHS Foundation Trust, 2016-2022.
Of 3350 IGRA tests (excluding duplicates), 465 (13.9%) gave positive results.
Among 405 people with positive IGRAs and adequate records, 140 (35%) were under investigation for active TB, 161 (40%) were tested as part of preventive screening (146 contacts of people with active TB disease, 11 new entrants to the UK and 4 People Living with HIV), and 100 (25%) were tested prior to receiving biologic (86) or non-biologic (15) immunosuppressants.
Rates for completion of TPT were 62% (100/161) for the preventive screening and 73% (73/100) for the pre-immunosuppression cascades, indicating significant attrition overall. Two patients developed active TB. Strengthening each step in both cascades of care is indicated to increase the proportion of people completing TPT.

206: A Quality Improvement Project on Antimicrobial Stewardship in General Surgery Gloucestershire Hospitals NHS Foundation Trust.

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Objectives
To investigate the standard of antimicrobial prescribing in a general surgery department and improve antimicrobial stewardship (AMS) by encouraging the practice of “Start Smart Then Focus” (UKHSA, 2023).

Methods
We retrospectively reviewed the medical records of 30 general surgical inpatients admitted in January 2024. Data included diagnosis, antibiotics prescriptions and microbiological investigations.

Results
The two most common sites of infection were bowel (37%, n=11) and biliary (33%, n=10). 50% of patients (n=15) received intravenous followed by oral antibiotics, whilst 33% (n=10) only received intravenous antibiotics. Course length was ≤7 days in 33% (n=10) and >21 days in 13% (n=4). 3 out of 4 patients who received >21 days of antibiotics were discussed with microbiology. 30% (n=9) had no documented antibiotic review at 48-72 hours. 20% (n=6) were discussed with microbiology. 72% (n=18) of patients treated with intravenous antibiotics did not have blood cultures sent.

Discussion
The study highlighted a lack of documented antibiotic review at 48-72 hours. Interestingly, those who only received intravenous antibiotics often had multiple barriers to oral switch and the complexity of their surgical conditions justified longer course lengths. Microbiological sampling is difficult in many surgical conditions. Blood cultures were under-utilised.
Proposed strategies to improve antimicrobial stewardship include education and utilisation of the electronic prescribing system to generate alerts to review prescriptions. A targeted guideline on blood culture indications is needed for general surgery.

Conclusion
This study demonstrated opportunities for improvement alongside the challenging nature of antimicrobial stewardship in complex surgical conditions.

228: Closing the loop of post-analytical testing: Impact of auditing amended reports on patient care in a clinical microbiology laboratory.

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Background/aim:
Laboratory procedures must control the management of amended testing reports, to reduce the risk of clinical impact. These procedures may be audited less frequently than other laboratory quality measures. We sought to audit the management, and clinical impact, of amended reports issued by our clinical microbiology laboratory.

Method:
We audited all amended reports issued from November 2023 to January 2024 inclusive against the ISO 15189:2022(7.4.1.8) standard. Specific criteria included; the report was clearly identified as being amended, the reason for change was documented and the user was made aware of the revision. The clinical impact was assessed and categorised by two reviewers.

Results:
During the timeframe, 128 reports were amended. 127 (99.2%) amendments were clearly identified. The reason for change was documented in 109 (85%) reports and the user was informed by the release of an amended electronic report in 100% of cases. 11 amendments (8.6%) resulted in potential clinical impact, including transcription/input errors (4/11), sample not initially processed in error (3/11), and incorrect interpretation of Gram stain (2/11).

Discussion/conclusion:
Management of amended reports is a valuable quality indicator of the post-analytical phase of testing. Auditing demonstrates that our management of amended reports is largely in line with ISO 15189:2022 standards, with scope for improving documentation of reason for report change. However, the process of auditing amended reports and determining the root causes of those with a clinical impact has shown to be useful in highlighting other procedures in the analytical cycle that may require further attention and improvement.

240: Beta-D-Glucan audit 2023-24 - widespread use but frequently unclear rationale for testing.

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[1]Lancashire Teaching Hospitals Trust

The beta-D-glucan assay (BDG) has shown to be a sensitive marker of certain invasive fungal infections but is limited by poor specificity. An audit of its application covering October 2023 to March 2024 was conducted which included 182 requests from 144 patients. Results were compared against a previous audit in 2019-20 with outcomes including: linkage to stopping systemic antifungals when negative, test request volume, turnaround time, rationale for requesting and the locations and specialties requesting BDG tests.

Overall, BDG requests increased substantially since the last audit although this has remained stable since 2021. Awareness of the assay from more diverse medical specialities has increased with clinicians seeking to rule-out fungal infections, often in severely unwell patients. Negative results often did not influence antimicrobial stopping with results pre/post-dating regimens or end-of-life care. The rationale for BDG testing is frequently absent from case-notes and in 34.5% of cases was not recommended by an infection specialist. However, severe respiratory infection was the most common theme for requesting with evidence linking BDG testing, in lieu of PCR testing, to rule out Pneumocystis infection.

Widespread awareness of the test is infrequently associated to its use in antifungal stewardship at our trust. A case for rationalising BDG use by better education, clear user-guide advice and possible gatekeeping by infection specialists is proposed as a means of diagnostic stewardship and cost-control.

254: Quality Improvement Project: Improving adherence to BHIVA recommendations on syphilis surveillance in PLWHIV in HIV clinics at North Manchester General Hospital.

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Introduction:
The British HIV Association (BHIVA) categorises people living with HIV (PLWHIV) into high and low-risk categories for syphilis monitoring, depending on their sexual and social history: high-risk patients require 3-monthly syphilis screening including an STI screen, whereas low-risk require annual syphilis screening. We felt that in our hospital, syphilis surveillance was not being followed as per BHIVA guidelines; we aimed to explore the reasons for this and improve our adherence to guidelines.

Methods and results:
We audited 60 randomised patients from our HIV clinics, assessing their syphilis risk status, frequency of syphilis testing and frequency of sexual history taking. Of the 3 high-risk patients, 0 were having sufficient syphilis testing. Only 27 (47%) in the low-risk group were having sufficient testing. In 65% of cases, the sexual history was not up-to-date, and so the patient's risk was unclear.

We subsequently surveyed the HIV team (consultants, registrars and specialist nurses) on syphilis testing. Only 33% (n=12) appreciated the need for 3-monthly screening for high-risk patients. Only 42% discussed sexual history at every encounter, identifying time constraints and patients' reluctance as barriers.

As our intervention, we provided teaching sessions to the HIV team on syphilis monitoring, methods to incorporate sexual history into consultation and information on arranging additional sexual health screening.

Conclusion:
We identified a substandard adherence to syphilis surveillance in PLWHIV in our hospital secondary to unawareness of guidelines and barriers to sexual history taking. Following our intervention, through re-auditing we aim to see improved adherence to syphilis surveillance guidelines.

255: A clinical audit re-assessing compliance of the gentamicin once daily regimen dosing in the presence of decision support tool with Trust antimicrobial guidelines at Queen Elizabeth Hospital, University Hospitals Birmingham (UHB).

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[1]University Hospitals Of Birmingham, [2]University Hospitals Of Birmingham

Background:
In May 2023, the decision support tool turned off for redevelopment reasons, and therefore, clinicians had to use a manual calculator to obtain the dose. The audit showed 84.5% prescriptions were non-compliant.
In July 2023, the updated aminoglycosides digit support tool released and now a re-audit has been carried out to assess the impact of the decision support tool in complying with gentamicin dosing guidelines.
Trust's gentamicin guidelines:
C.G.GFR > 40mL/min: 5mg/kg OD
C.G.GFR 20-40mL/min: 3mg/kg OD
If BMI ≥ 30kg/m2 use ideal body weight
Standard:
100% of prescriptions compliant with UHB Antimicrobial Guidelines
Methods:
The sample included 50 random patients who were prescribed the gentamicin once a day regimen between Feb and Mar 2024. Patient weight, BMI, corrected GFR, height and gender were obtained for dose calculations. Doses were calculated using the guidelines and rounded to the nearest 40mg due to the use of 80mg/2ml gentamicin vials. Calculated doses were compared to the doses prescribed.
Results:
72% of gentamicin doses were prescribed correctly, whereas 28% of prescriptions were non-compliant with trust guidelines.
100% compliance was noted in the following directorates Trauma and orthopaedics, Emergency Department and Critical care. The directorate with lowest level of compliance is Ambulatory Care, 75% of gentamicin once daily prescriptions were non-compliant.
57% of non-complaint doses, utilised the decision support tool.
Conclusion:
Utilising the decision support tool has shown an increase in prescriptions compliance to gentamicin dosing guidelines. It showed a positive impact in decision making and improved compliance with the guidelines.

267: Clinician confidence in antimicrobial prescribing in breastfeeding patients: a service evaluation

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The World Health Organisation recommends exclusive breastfeeding for the first six months of life. Inappropriate prescribing in breastfeeding patients risks infant exposure to antimicrobials with short and long-term effects. Safe antimicrobial use in breastfeeding is essential, however, overly cautious approaches risk inadequate treatment and inappropriate interruption/cessation of breastfeeding.

Clinician confidence in antimicrobial prescribing in breastfeeding was surveyed. Statistical significance was determined using Chi-squared testing in R (v. 4.2.3). Case notes review of entries mentioning breastfeeding within laboratory information management (LIMS) [01/2022 – 03/2024] and electronic prescribing and medicines administration (EPMA) [06/2023- 05/2024] systems was performed.

Only 36.8% of surveyed clinicians (n=38) reported confidence in antimicrobial prescribing in breastfeeding. Clinician grade had a statistically significant impact on confidence ($p<0.001$), with low confidence in Foundation (n=7, 0%) and Internal Medicine trainees (n=3, 0%). Infection specialists (n=19, 50%) reported confidence in 52.6% of cases, without statistically significant difference from non-infection specialists. All clinicians were familiar with the British National Formulary resource. Familiarity with ‘LactMed’, ‘e-lantancia’ and ‘Breastfeeding Network’ was much lower (<30%). Within LIMS, 41 records of confirmed breastfeeding patients were identified. A definitive breastfeeding-appropriate antimicrobial plan was documented in 90% of cases, though documentation of a patient discussion was present in only 17%. In EPMA, 15 records of confirmed breastfeeding patients were identified, 67% documented a definitive antimicrobial plan and 33% recorded a patient discussion. Resource(s) were consulted in 6 (40%) cases, most commonly Medicines Information services (n=4).

Improving clinician confidence and awareness of resources for antimicrobial prescribing in breastfeeding is essential.

39: Examining clinical factors involved in urinary tract infections in transgender individuals: a systematic review

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Introduction: Urinary tract infections (UTI) are common, and management is based on urogenital anatomy. Gender identity is widely used as a surrogate marker for urogenital anatomy in clinical practice and guidelines, however urogenital anatomy does not equate to gender identity. As such, suboptimal treatment is plausible and implications to the transgender community remain unclear. We conducted a systematic review to characterize the evidence on UTI management in transgender individuals.

Methods: A systematic review of the literature was conducted according to PRISMA guidelines. EMBASE, MEDLINE, and Scopus were interrogated for studies containing primary data evaluating transgender individuals with UTIs. Outcomes included incidence and factors associated with UTI, care considerations, and management.

Results: Six articles were eligible: two retrospective cohort studies, two cross-sectional studies, two case reports. UTI rates were highest among transfeminine individuals with bottom surgery. Transmasculine individuals with bottom surgery had comparatively low rates, however risk may be increased if surgery includes urethral diversion and lengthening. Factors associated with UTI included urethral stenosis, urethrovaginal fistulas, neovaginal dilation and douching. Important care considerations identified included not assuming anatomy and clarifying this sensitively. No evaluations on management were identified.

Conclusion: This systematic review revealed that evidence for optimal UTI treatment in transgender individuals is lacking. Furthermore, there is need to optimise communications to obtain relevant clinical information to guide management. High quality longitudinal cohort studies are urgently needed to address this disparity in a population which already experiences significant health inequity.

128: Poultry Food Assess Risk Model for Salmonella in Chicken Eggs: A Quantitative Risk Assessment of Human Salmonellosis from Consumption of Local Eggs in Saudi Arabia

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Salmonellosis is a major global public health concern caused by consuming contaminated food, especially chicken eggs. In Saudi Arabia, chicken eggs are a significant part of the diet due to their nutritional value and versatility in cooking. The increasing prevalence of salmonellosis in Saudi Arabia is due to the growth of foodservice establishments and higher food consumption. Antibiotic resistance to Salmonella in Saudi hospitals also increases the likelihood of widespread outbreaks. This study investigates the potential risk of chicken eggs causing salmonellosis to prevent it. Using the Poultry Food Assess Risk Model (PFARM), a Quantitative Microbial Risk Assessment (QMRA), the study predicted how Salmonella contamination in eggs contributes to the incidence of salmonellosis. It examined consumer exposure to Salmonella through egg consumption and identified key risk factors. Under baseline conditions, the rate of Salmonella exposure from meals was 1.54%, affected by factors such as storage, hygiene, portion size, and egg doneness. No serious illnesses or deaths were recorded in 125,000 simulated meals. Scenario studies showed that higher initial contamination and the high-risk serotype Enteritidis increased exposure and illness rates due to greater cross-contamination and enhanced bacterial survival during undercooking. The study highlights the importance of managing contamination levels and serotype prevalence, alongside proper food handling techniques, to reduce Salmonella risks.

Response to the COVID-19 pandemic

100: Low risk of harm from hospital acquired SARS-CoV-2 infection.

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Background

The impact of hospital-acquired SARS-CoV-2 (COVID-19) infections has changed due to virus evolution and population immunity from immunization and natural infection. As the virus evolves and more people gain prior exposure, the impact of hospital-acquired infection on patients reduces. This study aimed to determine if outcomes differ between inpatients exposed to SARS-CoV-2 who developed infection and those who did not.

Methods

Contact events were extracted from Infection Prevention and Control team records, and laboratory records identified positive SARS-CoV-2 results. Patients were considered to have acquired SARS-CoV-2 from a contact event if they tested positive within 7 days. Primary outcomes were death or ITU admission within 28 days of the contact event. Patient records were examined for demographic details, co-morbidities, and length of stay.

Results

3089 contact events involving 2170 inpatients were identified. 201 (9.3%) patients tested positive for SARS-CoV-2 within 7 days of a contact event. Patients who acquired SARS-CoV-2 were older (median age 80 vs 74, $p < 0.001$), with no difference observed in patients with airways disease. No significant difference was found in the number of deaths (8% vs 5.2%, $p = 0.15$) or ITU admissions (1% vs 1.4%, $p = 0.9$) between patients who tested positive and those who did not.

Conclusions

No increased risk of death or ICU admission was found in patients who tested positive for SARS-CoV-2. This indicates that hospital-acquired SARS-CoV-2 in the UK poses a low risk of harm to patients, suggesting that infection control policies should be adjusted accordingly.

Surgical site infections

126: Perioperative antimicrobial prophylaxis in cardiothoracic surgery – the results of eight audit cycles in a specialist cardiothoracic centre.

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[1]Royal Papworth Hospital

Introduction

Surgical site infections (SSIs) are associated with significant patient and healthcare burden. As part of an incidence investigation of our trust's raised SSI rate, we examined practice around peri-operative prophylaxis. Previous audit cycles' compliances fluctuated between 72% and 83% since 2022-2023 highlighting the requirement for improvement especially towards compliance with local policy. The implemented anaesthetic interventions were simplifying and prompting electronic prescribing and intra-operative documentation, and incorporation of antimicrobial management into the WHO safe surgery checklist. We aimed to evaluate compliance with peri-operative prophylaxis following implementation of the above recommendations.

Methods

Patients who underwent cardiothoracic surgery between 15/4/2024 and 19/4/2024 were identified. Transplantation-related procedures were excluded. Data on intraoperative events, patients' allergies, weight and MRSA status were extracted from electronic patient records.

Results

Of the 39 patients included, 26 and 10 underwent cardiac and thoracic procedures respectively. The compliances for correct choice, dosage, timing, number of doses of antibiotics and appropriate postoperative antibiotics were 89%, 89%, 78%, 97% and 97% respectively. Documentation of intraoperative antibiotic administration achieved 100% compliance. The overall compliance was 92%, from 74% most recently. Common reasons for non-compliance were inappropriate antibiotics given high MRSA risk, inadequate antimicrobial dosages, administration outside the optimal time window and lack of documentation of knife-to-skin time.

Conclusion

We saw a global improvement in compliance in this cycle, validating the role of our action plans. This highlights the utility of collaboration between clinical and microbiological teams to improve peri-operative antimicrobial practice and the importance of intraoperative documentation in good clinical practice.

184: Development and Evaluation of the VAP Independence Waterproof Shower Pouch for Protecting Central Venous Catheter (CVC) and Peripherally Inserted Central Catheter (PICC) Lines

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Introduction:
Central Venous Catheter (CVC) and Peripherally Inserted Central Catheter (PICC) lines are essential for administering medications and nutrients. Maintaining sterility during activities like showering is critical to prevent infections, which can be costly (£3,655 to £11,146 per incident, NICE 2020). The VAP Independence Waterproof Shower Pouch, developed by Independence Products Ltd, prevents water ingress and reduces infection risks.

Methods:
The VAP Independence Waterproof Shower Pouch, made from high-quality waterproof materials, underwent laboratory testing for water resistance in January 2023. An internal clinical evaluation involving 50 patients from February to March 2023 assessed usability, comfort, and infection prevention effectiveness.

Results:
Laboratory tests confirmed the pouch's effectiveness in preventing water penetration. In the clinical evaluation, 98% of patients reported high satisfaction with comfort and security. No infections were reported over 30 days, demonstrating its efficacy.

Discussion:
The VAP Independence pouch offers a cost-effective solution for reducing healthcare expenses associated with catheter-related infections. Its availability on NHS prescription ensures patient access to infection prevention measures during daily activities.

Conclusion:
The VAP Independence Waterproof Shower Pouch is a valuable tool for protecting CVC and PICC lines during showering, contributing to improved patient outcomes and reduced healthcare costs.

Keywords:
Central Venous Catheter, Peripherally Inserted Central Catheter, Infection Prevention, Waterproof Pouch, Patient Safety

Surveillance and epidemiology

5: Auto-messaging for Health Precaution Messages in MDRO Cases: A Healthcare Innovation

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Introduction
This abstract examines the implementation of an auto-messaging system (AMS) to streamline surveillance work process. By triggering predefined infection prevention messages in nurses' handover notes upon MDRO case identification, the AMS aims to enhance surveillance efficiency and combat the spread of MDROs.

Method
A survey was conducted among infection prevention nurses (IPNs) at an acute local tertiary hospital assessed the impact of the AMS on their work. Fourteen IPNs participated with exclusion criteria applied to two IPNs who recently joined the department and lacked experience with the previous work process. The survey assessed workload changes, accuracy, timeliness, challenges, compliance improvement, and perceived benefits of the AMS.

Results
Survey findings revealed positive outcomes lined to the AMS implementation. The majority of IPNs reported workload reduction, improved accuracy, and timeliness, leading to significant time savings. Despite some facing challenges, the primary benefit identified was time-saving. Additionally, a cost-benefit analysis demonstrated a tangible return of investment, with substantial time savings outweighing initial expenses. The project cost was $3115, calculated based on 5 man-days at a rate of $623 per man-day. These initial expenses were offset by significant time savings for IPNs, translating to approximately 38.3 hours saved per week across the infection prevention department.

Conclusion
The implementation of AMS in MDRO cases represents a transformative innovation in infection prevention and control. Despite initial challenges, its long-term benefits outweigh the costs, highlighting its role in improving patient safety and healthcare outcomes.

38: Microbiological surveillance of operation theatres of Civil Hospital Lunglei: Mizoram-northeastern part of India, from 2021 to 2023

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[1]Civil Hospital Lunglei, Lunglei: Mizoram, India

Objectives: To identify bacterial colonization of surfaces, equipments and to determine the microbial contamination of air in the OTs of a tertiary care hospital in Lunglei, Mizoram which is in north-eastern part of India.

Methods: Surface samples were taken with wet swab from different sites and equipment and Settle plate method for air in the OTs. In-use test was employed for disinfectants.

Results: Thirty (30) bacterial species were isolated from the air of OTs before fumigation. The most frequently isolated bacteria was Methicillin-resistant Staphylococcus aureus (MRSA) (37.5%) followed by Coagulase negative Staphylococci (CONS) (31.25%), Bacillus spp. (12.5%), MSSA (6.25%), Micrococcus spp. (6.25%) and the least being Klebsiella spp (3.12%) and E.coli (3.12%). MRSA was isolated once after fumigation. Swabs taken from operation table showed the growth of both MRSA and CONS-MR once before fumigation and no growth after fumigation. The disinfectants used for disinfecting instruments in OTs showed no growth using In-use test during the study period.

Discussion: This work has highlighted the presence of pathogens that are potential cause of nosocomial infections on the surfaces and air. Microbial contamination in OT leading to postoperative infections can have serious implications for patients and their families. Our study highlights the fact beyond any doubt that periodic and regular microbiological surveillance of OTs is essential to detect and control contamination.

Conclusions: Settle plate method for air, swabbing technique for surfaces and In-use test for disinfectants proved to be valuable in detecting the contamination level in our set-up with limited resources.

60: Repeated point prevalence surveys of healthcare-associated infections and antimicrobial use in Belgian nursing homes

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Objective: To compare the 2023-2024 prevalence of healthcare-associated infections (HAIs) and antimicrobial use (AU) in Belgian nursing homes (NHs) with previous surveys conducted in 2013 and 2016.

Methods: The point prevalence surveys methodology used in long-term care facilities by the European Centre for Disease Prevention and Control was applied in each survey. Trained NHs conducted the study on a single day. A resident questionnaire had to be completed for each resident present at 8:00 am, using ≥1 systemic antimicrobial agent and/or presenting ≥1 active HAI on the survey day. The adapted McGeer criteria-based case definitions to the recorded signs/symptoms of infections were applied.

Results: In 2023, 35 NHs (3972 eligible residents) participated, less than in the previous years (2013: 87 NHs including 8756 eligible residents; 2016: 158 NHs including 16218 eligible residents). The median prevalence of HAI was 3.3% in 2023 (2013: 3.6%; 2016: 3.4%). Respiratory, urinary and skin/wound infections were the most commonly reported HAIs in all three surveys with minor differences in percentages. AU prevalence was 3.8% in 2023 (2013: 5.1%; 2016: 5.6%). The main prescribed antimicrobial classes were common to all three surveys: 'beta-lactam, penicillins' and 'other antibacterials'. In each survey, around 30% of antimicrobials were prescribed prophylactically, mainly for urinary infections (2013: 90.0%; 2016: 79.2%; 2023: 61.1%).

Conclusion: HAI prevalence was comparable to the 2013 and 2016 survey results. AU was lower than in previous surveys. Final conclusions on the 2023-2024 results will be drawn this summer when the 2024 data become available.

81: Two years follow-up on ending screening and isolation for vancomycin-resistant E. faecium in hospitalized patients

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Background
Worldwide, hospitals use many resources to reduce the incidence of vancomycin-resistant E. faecium (VREfm). However, use of screening and isolation needs to be balanced with clinical impact, patient safety, and hospital costs.
In 2023, we reported that the incidence of VREfm increased in the following year after ending screening and isolation at a large Danish University Hospital, but without impact on patient characteristics or clinical outcome (bacteraemia within 30 days, 30-day mortality, VREfm-attributable death)[a].
Studies from high-incidence countries describe an increase in incidence followed by a stabilisation three years after ending screening and isolation.
We therefore aimed to investigate the extended impact of ending VREfm screening and isolation on the incidence of VREfm in our low-incidence university hospital.

Methods
A retrospective cohort study including patients with a first time VREfm clinical isolate (index isolates) detected in the period 2015-2023 at Odense University Hospital.
The intervention period with screening and isolation was 2015-2021, and the post-intervention period 2022-2023.
Information was retrieved from microbiological databases and hospital records.

Results
After ending screening and isolation, we found a three-fold increase in number of index isolates in 2022, followed by a 26% decrease in 2023.

Conclusions
After ending screening and isolation for VREfm at the university hospital, the incidence initially increased but started decreasing after only one year. We found nothing in the extended follow-up period to support a reintroduction of screening and isolation.

[a]Hansen et al. Vancomycin-resistant Enterococcus faecium: impact of ending screening and isolation in a Danish University hospital. JHI 146(2024)82-92.

132: Application of a novel whole-genome sequencing tool provides new insights in epidemiology of Staphylococcus aureus virulence factors from healthcare clinical isolates

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Background
S.aureus virulence factors, including Panton-Valentine Leukocidin (PVL), are associated with severe infection. Characterisation is limited to selected community-overrepresented samples, constraining our epidemiological understanding. In the UK estimated PVL prevalence is <2%; less is known for other factors. We used a novel whole genome sequencing (WGS) tool to characterise S.aureus virulence factors amongst clinical isolates.

Methods
Between March 2023-May 2024 routinely-collected healthcare S.aureus isolates from a microbiology laboratory serving a large healthcare institution in England underwent WGS using a novel comparison tool (Genpax). Genomes were interrogated for selected genes encoding antimicrobial resistance and toxins including PVL, toxic shock syndrome (TSS), enterotoxins (entA-Z) and exfoliative toxins (eta-e).

Results
Over 15 months 794 isolates were successfully sequenced. 37/794 (4.7%) contained mecA conferring methicillin-resistance; two isolates possessed mupA conferring mupirocin resistance. 52/794 (6.5%) possessed genes for PVL and 81 (10.2%) for TSS. The most frequent toxin genes were entW (99.7%) and entX (86.3%). Isolates containing mecA were more likely to possess PVL, entB,D,J,L,R and ete genes, with a trend towards increased mupA. Isolates lacking mecA were more likely to possess entI,X genes.

Conclusion
Our study reveals higher prevalence of PVL genes than previously estimated, and novel epidemiology data on other clinically-relevant virulence factors. Significant associations between antimicrobial resistance and toxin genes highlighting the complexity of S.aureus pathogenicity and the need for genomic surveillance to understand S.aureus epidemiology and informing targeted infection control strategies.

140: Application of prediction technologies to optimise infection prevention and control (IPC) in healthcare: a scoping review

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Background:
Healthcare-associated infections (HCAIs) continue to pose significant risks to patients' safety. Artificial intelligence (AI) and predictive analytics offer the potential for enhanced detection and prevention, and in turn optimise management of HCAIs. Yet, our understanding of their role is unclear. We conducted a scoping review to characterise application of AI to predict and prevent HCAI.

Methods:
Following PRISMA-ScR guidelines, we reviewed MEDLINE, Cochrane, EMBASE, PubMed, CINAHL, Scopus and PsycINFO for articles published between 2014-2024. Search terms included ‘prediction’, ‘artificial intelligence’ and ‘infection’. Articles were reviewed for application settings, performance and impact on HCAI reduction.

Results:
From 46,477 initial results, 17 studies met our criteria for review. Settings included critical care (n=5) and acute medical wards (n=12). The most common infections evaluated were urinary tract infections (n=3) and healthcare-associated pneumonia (n=3). Average model performance was 70% (range 45-90%). The majority of studies (15/17) were retrospective in nature, and used heterogeneous mathematical approaches, evaluations and datasets. None evaluated the impact on HCAI reduction.

Conclusions:
This review reveals that whilst the application of AI prediction technologies in HCAI management is emerging and signalling promising results, the diverse nature of approaches and lack of impact assessment limits our understanding. There is a need for prospective harmonised evaluations of high-quality consistent data-sets and impact assessment on patient safety in clinical settings.

183: Nontuberculous Mycobacteria in England from 2018 to 2023; an overview

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[1]UKHSA

Disease caused by nontuberculous mycobacteria is increasingly reported; however, lack of structured surveillance means that it is difficult to adequately assess the scale of the problem.

We describe the pattern of referred NTMs to UKHSA over 5 years in England. There were 49,042 NTM isolations, with numbers rising between 2018 and 2019, falling 32.0% during the pandemic before recovering to above pre-pandemic levels in 2023. 87% of isolates were from pulmonary sites with the commonest species being M chimaera (25.1%), M avium (24.9%) and M abscessus (11.9%). 1.2% of cultures had 2 different species isolated and 0.02% 3 different species.
Isolates from sterile sites make up 2.1% of the total (1,039), with the commonest species being M avium (36.2%) and M chelonae (28%).
Other body sites include skin, gastrointestinal and genitourinary tracts contributing 10.5% of all isolates, with the commonest species being M avium (26.6%), M chimaera (19.9%) and M chelonae (9.5%).
The number and proportion of isolates identified as M chimaera increased between 2018 (1,850 isolates 21.7% of total) and 2023 (2,691 isolates, 27.8% of total in 2023). The numbers and proportions of isolates that were M abscessus fell over the same time period (14.6%, 1,280 isolates in 2018; 8.8%, 850 isolates in 2023). This may reflect a change in sampling or referral practice and warrants further investigation.
Susceptibility testing is performed when patients have features consistent with a diagnosis of NTM disease. 17% of pulmonary isolates (7,306) and 54% of sterile site isolates (534) had susceptibility testing.

212: A prospective community-based study optimising equitable community-based universal tuberculosis screening

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Background

The World Health Organisation estimate that a third of tuberculosis (TB) disease is undiagnosed. Universal TB screening aims to identify everyone with TB disease, but optimal methods are unknown.

Objective:

We aimed to optimise community-based universal TB screening.

Method

Five housing blocks in urban, peri-urban and shantytown areas of Lima, Peru were each visited five times. TB screening was offered with sputum collection, for microscopy and culture, and a questionnaire including sociodemographic factors. Reasons given for accepting or declining screening were recorded. Visits were also made to three non-residential community sites.

Results

144 homes were visited, and 149 people accepted screening from these households. At least one person accepted screening in 55% of homes where an adult was encountered. Within homes in which anyone accepted, 66% of residents accepted screening.

The yield of screening acceptance increased three-fold between visit 1 and visit 5, with the greatest increase achieved by visit 3.

Visits to a community kitchen, drug rehabilitation centre, and area where homeless people slept recruited 20 people (54% of 37 people encountered).

The main reason stated for declining was being too busy, and many individuals who initially declined later accepted screening.

Discussion

Repeated visits considerably increased screening yield. Including non-residential sites successfully screened vulnerable people who would be missed by door-to-door recruitment. These findings inform optimisation of equitable universal screening for tuberculosis disease.

Sustainability in healthcare

50: Environmental Sustainability – A Role for Diagnostic Stewardship

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[1]Health Service Executive

Background
Diagnostic laboratories produce huge quantities of unrecyclable waste. Diagnostic stewardship seeks to deliver safer, more efficient patient care through judicious diagnostic test utilization. “Wound swabs (WS)” are frequently tested specimens. Currently there is the likely indiscriminate utilisation of laboratory services for the analysis of possible poor-quality samples. This may result in marked expenditure through specimen processing and unnecessary treatment due to lack of clinical interpretation and specialist input, as well environmental implications.

Materials/Methods
A retrospective review of all WS laboratory requisition forms over a 1-week period was conducted. Those with relevant clinical details were deemed “appropriate”, while others “possibly inappropriate”. The total weight of consumables used for the processing of “inappropriate” samples was calculated and its subsequent associated carbon emissions via a Life Cycle Assessment as per PAS 2050:2011.

Results
358 WS were processed over the time period, of which 211 (58.9%) were deemed “possibly inappropriate”. These accounted for 13.12kg of unrecyclable waste and estimated emissions of 57.33kgCO2e (34.11kgCO2e for purchased goods and services, 18.79kgCO2e for transportation and distribution, 4.43kgCO2e for waste management). This is the equivalent of an average petrol car driving 350km. At these rates, every 100 WS produces 6.22kg of unrecyclable waste and estimated emissions of 27.17kgCO2e.

Conclusion
The provision of relevant clinical details to the laboratory can further optimise the diagnostic pathway for WS processing. This may not only increase the quality of laboratory outputs, in terms of data reporting and interpretation, but may also simultaneously reduce the environmental impact of our processes.

219: A scoping review on the role of ultraviolet irradiation for high-level disinfection of semi-critical medical equipment

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Introduction:
Semi-critical medical devices (SCMD) must meet high-level disinfection standards, but most chemical disinfection processes come at significant environmental costs in the form of toxic degradation products. A scoping review was conducted to assess the currently available evidence base for ultraviolet irradiation (UV) as a more environmentally sustainable alternative.

Method
We searched relevant databases such as MEDLINE, EMBASE, PUBMED, and Scopus using terms including 'ultraviolet rays', 'disinfection', and 'diagnostic equipment'. Studies using UV to disinfect SCMD following clinical or laboratory contamination were included.

Results and discussion
Of 807 initial search results, 11 met our inclusion criteria. These tested endocavitary ultrasound transducers(5), airway devices(4), orthodontic plier tips(1) and regional anaesthesia ultrasound probes(1). The studies were inhomogeneous and of variable quality. However, one prevailing theme was that UV appears to have better activity against viruses and pathogenic bacteria. Its slightly reduced activity against skin and mucosal flora sometimes compromised its overall bacterial log-reduction, but this is likely of less clinical significance.

The role of the initial organism load and clinical device shape was less evident. One study that compared different ultrasound probes found that UV disinfected the transvaginal probe better than the 4D probe but less than the linear array probe. Finally, both studies that evaluated residual protein as a surrogate for viruses and prions found almost zero levels.

Conclusion
This review underscores the potential of UV disinfection as a more environmentally sustainable method of disinfecting SCMD. Further research is needed to characterise the determinants of UV efficacy for high-level disinfection.

269: 'Ur-ine breach of minimum retesting intervals!' : An exploration of the environmental and financial costs associated with sample rejections from NHS microbiology laboratories, reasons why sample rejection occurs, and effective interventions to limit waste in the pre-analysis phase of microbiology testing.

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Objective
This quality improvement project explored the causes and impact of inappropriate requests to microbiology laboratories, to inform strategies to reduce the number of samples sent inappropriately and associated financial and environmental costs.

Methods
Data on number of samples rejected 01/06/2023-31/01/2024, sample type, and sample origin were requested from two microbiology laboratories in England. Data were descriptively analysed using Excel. Data with unknown rejection codes or locations were omitted from the analysis.
Analysis of laboratory data identified the most common types of rejected sample, which became the focus of further investigation. Clinicians were invited to complete a survey about their knowledge and attitudes. Findings guided development and testing of an intervention.

Results
Urine was the most common sample type rejected; this was most frequently because specimens were sent within the minimum retesting interval (MRI) or sent in incorrect sample containers.
Of survey respondents, <10% correctly identified the MRI for urine culture. A minority reported that concern about environmental impacts of urine analysis would make them less likely to request or collect a sample.
Results indicated a need for guidance on how and when to request and collect urine for culture. A flow chart was developed outlining correct sampling procedure, to inform clinicians and lab staff. A prompt to be included in the requesting process was created and refined based on piloting.

Conclusions
Samples that are not suitable for microbiological testing have significant environmental impacts. Simple interventions could reduce collection of such samples, which would have significant environmental and financial benefits.

Tropical clinical cases

29: An Unusual Presentation of an Unusual Bug in a Patient From a Non-Endemic Area.

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Visceral Leishmaniasis (VL), or Kala-Azar, is a potentially fatal parasitic infection prevalent in tropical and subtropical regions, notably in Brazil, East Africa, and India. It is caused by the protozoan parasites Leishmania donovani or infantum, transmitted through the bite of the female Phlebotomine Sandfly. Typical clinical manifestations include prolonged fever, weight loss, splenomegaly, anaemia, and pancytopenia. Individuals at risk include adventure tourists, humanitarian aid workers, immigrants, refugees from endemic areas, and long-term travellers.
In this case, we present an unusual VL diagnosis in a man in his 70s, initially presenting with an out of hospital cardiac arrest. He currently resided in the South of Spain but was attending the hospital for a routine appointment. He had had a prolonged history of night sweats, weight loss and fatigue. Subsequent investigations revealed pancytopenia and hepatosplenomegaly. He was worked up for a pyrexia of unknown origin and treated for a hospital-acquired pneumonia. Bone marrow aspirate was done for the investigation of pancytopenia and this confirmed VL through bone marrow aspirate and Leishmania serology.
He was treated with Liposomal Amphotericin B, which led to significant clinical improvement, including normalization of haematological parameters and reduction in spleen size. This case underscores the importance of thorough travel history and multidisciplinary team involvement in diagnosing and managing VL, especially in non-endemic regions. Ongoing vigilance and awareness of VL are crucial among healthcare professionals to facilitate timely and accurate diagnosis.

55: First case of confirmed Congenital Zika Syndrome in the UK

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We report the first confirmed case of congenital Zika syndrome (CZS) in the UK. Suspicion was raised after routine fetal anomaly screening at 20 weeks' gestation revealed a small head circumference and cerebellum, thin cortical rim, brain calcifications, an abnormal facial profile and bilateral talipes. The patient had travelled to Thailand during her first trimester where she had a self-limiting rash illness. TORCH screen and syphilis were negative. Samples were tested for Zika virus (ZIKV) at the Rare and Imported Pathogens Laboratory (RIPL), Porton Down. The ZIKV PCR was indeterminate (Ct 39) and IgG positive raising the possibility of recent infection. To confirm the diagnosis, booking bloods taken immediately following her return from Thailand were tested. Neither ZIKV IgG nor IgM were detected, and it was PCR positive (Ct 32.4). Seroconversion and detection of RNA confirmed the diagnosis of acute ZIKV infection. The patient decided to end the pregnancy and fetal blood and amniotic fluid samples taken at fetocide were also PCR positive, confirming CZS. Sequencing confirmed the Asian-American (AA) ZIKV clade.

Since the explosive ZIKV epidemic in 2015, we have seen a huge change in the epidemiology of the cases we are diagnosing at RIPL. This case serves as a reminder that despite the reduction in reported cases worldwide, ZIKV remains endemic in many countries, posing a threat to both the local population and travellers. It highlights several important points around when to suspect and test for ZIKV and the potential consequences of infection in pregnancy.

148: A case of rhino-cerebral Mucormycosis in an immunocompetent adult

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Background

Mucormycosis is a rare, aggressive and often fatal infection caused by a group of fungi called Mucormycetes. Infection typically affects immunocompromised individuals, and can present in a number of different organ sites. Treatment relies upon early diagnosis and treatment with anti-fungals, and often surgery.

Case report

A 25 year old male is referred to Infectious Diseases after presenting to the emergency eye clinic 3 months previously. He reported reduced visual acuity and diplopia, with associated pain and swelling in the right eye. The patient worked in the building trade, and had moved from India to the UK earlier in the year. There was no other past medical history. A CT scan of the orbits revealed a lesion in the right medial rectus muscle with no signs of bony destruction. Histological appearances were in-keeping with Mucormycosis infection, yet pan-fungal and Mucor specific PCRs were negative. The patient was started on Liposomal Amphotericin B (LAmB), and subsequently Isavuconazole. Decompressive surgery was performed, with further radical surgery planned. The patient self-discharged and was lost to follow-up.

Conclusion

We present a rare case of rhino-cerebral mucormycosis in an immunocompetent adult. We postulate that infection occurred by inoculation of spores via the sinuses, potentially related to mucosal irritation sustained in the workplace. We believe that the classically aggressive course of this disease was attenuated as our patient was immunocompetent.

274: A per"cyst"ing cause of seizures

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Introduction

Neurocysticercosis is a parasitic infection of the central nervous system (CNS) caused by ingestion of ova of pork tapeworm, Taenia solium. Here, we present a particularly challenging case of neurocysticercosis with both intra- and extraparenchymal CNS involvement.

Case presentation

A 29-year-old woman was admitted with generalised seizures. She had recently migrated to the UK from Southern Africa. She had no past medical history. Examination revealed dysphasia, global motor weakness and cognitive impairment. She tested negative for HIV antibodies. Computed tomography (CT) scan of her head showed multiple ring-enhancing calcified lesions within both cerebral hemispheres and multiple cystic lesions in both lateral ventricles. Magnetic resonance imaging (MRI) confirmed the extent of disease and revealed scolices within cysts. Serum cysticercal antigen was high (ELISA index 250). Following multidisciplinary discussion involving the neurosurgical team, a conservative plan was commenced with serial imaging and treatment comprising praziquantel, albendazole, steroids and levetiracetam as the risk of surgery was deemed to be high. She was discharged home after receiving 14 days of inpatient treatment to continue oral therapy. At follow up after 3 months, there was improvement in seizure frequency and mobility, but she continued to have significant cognitive impairment and remained unable to work.

Discussion

Neurocysticercosis is a common cause of seizures globally. The mainstay of treatment is with cysticidal agents and anticonvulsants, although, surgery may be indicated in patients with extraparenchymal disease where there is a risk of hydrocephalus. Neurocysticercosis should be considered in all patients presenting with seizures coming from endemic areas.

Tropical infections

231: Improving access to testing for Trypanosoma cruzi infection for patients of Latin American origin receiving antenatal care in a London district general hospital

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Objectives
Chagas disease (CD), caused by the protozoan parasite Trypanosoma cruzi, is endemic in Latin America and can remain asymptomatic for decades, increasing congenital transmission risk. Despite national Migrant Health guidance, UK-based screening for Latin American migrant women of childbearing age is not routine. Significantly underdiagnosed CD has previously been identified in London-based Latin American immigrants.

We assessed CD screening in Latin American individuals receiving antenatal care in a North London District General Hospital to determine prior screening rates, test uptake, and case identification.

Methods
Antenatal patients of Latin American origin at the Whittington Hospital from June 2021 -December 2023 were identified via their self-completed family origin questionnaire and thalassaemia screen. Patients were contacted in English or Spanish to confirm eligibility and gain verbal consent. Patients were eligible if they or their biological mother was born or raised in South America, Central America or Mexico. Stored sera were sent to the National Parasitology Reference laboratory for Trypanosoma cruzi serological testing.

Results
0/135(0%) patients underwent Trypanosoma cruzi screening at antenatal booking. 40/135(29.6%) patients were uncontactable. 16/95(16.8%) contacted patients were ineligible. 4/95(4.2%) declined testing. 12/75(16%) consented patients' samples had been discarded. 0/63(0%) samples tested for Trypanosoma cruzi were positive.

Discussion
CD screening was not routinely offered in antenatal services, with high uptake when offered. 29.6% of potentially eligible patients were uncontactable, highlighting the importance of screening at antenatal booking to avoid lost opportunity for case identification. The next stage of our Quality improvement project aims to embed routine screening in antenatal services.

Viral infections

69: Assessment of Hepatitis B reactivation and prophylaxis usage in anti-HBc positive solid and bone marrow transplant patients over a five year period in a large tertiary hospital

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Hepatitis B virus (HBV) is a blood borne virus which can lead to cirrhosis and hepatocellular carcinoma. WHO estimate ~3.2% of the world's population are living with chronic Hepatitis B infection, with an estimated 1,100,000 associated deaths per year. 95% of immunocompetent individuals will spontaneously clear HBs antigen and HBV DNA from their blood, though residual virus remains in the body at a sub-clinical level. If the host immune system is compromised, for example due to immunosuppression following transplant or certain kinds of chemotherapy, then the virus may reactivate. The risk of this can be minimised by offering high risk patients prophylactic antivirals, though there is a lack of clear consensus on which patients should be offered these.

Addenbrooke's hospital in Cambridge (UK) is a major centre for solid organ and bone marrow transplants, and so has a significant number of immunosuppressed patients at risk of HBV reactivation. We assessed the serological and clinical records of transplant patients who had tested positive for anti-HBc antibodies between 2018 and 2023. From 5262 documented transplant patients, we identify 74 patients at risk of HBV reactivation. We reviewed whether these patients had received prophylaxis and whether they reactivated HBV. We find that <15% of at risk patients received HBV prophylaxis locally, none of which reactivated the virus. Four patients reactivated HBV, none of which received prophylaxis. We go on to compare local actions to published suggestions for HBV prophylaxis in the immunosuppressed, and estimate the cost of acting in line with this guidance.

78: Influenza A virus-associated encephalopathy in a 19 year old Indian male

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Background: This case of probable influenza A virus-associated encephalopathy highlights a lack of firm diagnostic criteria and a disease spectrum.

Case presentation: A 19 year old Indian male presented with a two week history of coryza, acute retention and lower limb weakness. An MRI spine was normal. He represented 4 days later with confusion, fever and coryza. A CT head was unremarkable. A throat swab was positive for influenza A, as well as pneumococcal antigen from urine. He developed worsening global weakness requiring intubation. He was treated with oseltamivir, ceftriaxone and clarithromycin. CSF showed mildly elevated lymphocytes and protein. Blood and CSF culture, CSF PCR, syphilis, HIV and HTLV serology were negative. TB was considered, but treatment was not started due a lack of evidence. A chest CT revealed bilateral patchy basal consolidation and no lymphadenopathy. MRI head and spine at 3 weeks showed abnormal bilateral lentiform nucleus signal changes; thought to represent subacute ischaemia, potentially related to infective or inflammatory cerebritis.

He was extubated at 6 weeks. He continued to gradually recover and had normal cognition and mild weakness at discharge. Influenza A and B PCR from CSF taken 6 weeks after his initial presentation was negative. Sequencing of the influenza virus confirmed genotype H1N1.

Conclusions: Despite PCR-negative CSF, this was most likely influenza-associated encephalopathy. Our patient’s promising recovery demonstrates one side of the spectrum; the other being fulminant, necrotising encephalomyelitis. Influenza-related CNS disease should be considered in anyone presenting with these symptoms, especially during the influenza season.

203: Coagulation Profiles of HIV infected Patients on Antiretroviral Therapy at a District Hospital in Ghana

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Background:
HIV infected patients on antiretroviral therapy (ART) tend to have haematological disorders and coagulopathies such as excessive bleeding and abnormal clot formation which impact their quality of life.
Methods:
We analyzed levels of selected indices of coagulation in Human Immunodeficiency Virus (HIV) patients on antiretroviral therapy (ART) attending ART clinic at the Methodist Faith Healing Hospital in the Afigya Kwabre District of the Ashanti Region of Ghana. The study comprised 90 adult participants aged 18 years who had been on ART for at least six months. Blood samples were taken from patients and analyzed for the following indices of coagulation, prothrombin time (PT), activated partial thromboplastin time (aPTT) and Platelet count.
Results: The mean (SD) values of PT, aPTT, and Platelet counts for patients on ART were 13.5 (3.4) seconds, 32.8 (11.2) seconds, and 287.1 (107.4) x10^9 cells/L, respectively. The values are within the normal ranges for PT (11-13.5 seconds), APTT (30-40 seconds), and Platelet count (150-450 x10^9 cells/L).
Conclusion: Coagulation indices (PT, APTT, and Platelet count) in HIV patients on ART were within normal ranges. Clinically, this indicates that ART does not adversely affect coagulation parameters in this patient group. Routine monitoring of these indices is recommended to ensure ongoing management and prevention of potential coagulation-related complications in HIV patients

227: Analysis of the first year of opt-out Emergency Department testing for hepatitis C virus within Greater Manchester

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Objectives:

A significant proportion of individuals with chronic hepatitis C virus (HCV) infection are not aware of their diagnosis and improved case-finding strategies are required. Accordingly, opt-out Emergency Department (ED) testing for HCV was introduced at our NHS trust on 1st December 2021.

Methods:
We performed a service evaluation of the first year of our opt-out ED testing programme. Testing for HCV was performed in ED attenders if blood tests were otherwise clinically indicated. We have analysed demographic characteristics and linkage-to-care for HCV RNA positive individuals. We also assessed the utility of repeat testing in patients who attended the ED multiple times during the year.

Results:
Within the ED population, our HCV Ab prevalence was 16 per 1000 and our HCV RNA prevalence was 20% (188/918). The 50–59-year-old age group contributed the highest proportion of HCV RNA positive tests (66/188, 35%). 149 HCV RNA positive individuals who required LTC have been successfully engaged in treatment (149/165, 90%). 33 HCV RNA positive individuals had multiple ED attendances. Blood tests from a repeat ED attendance were able to provide confirmation of treatment response in 4 individuals, and also identified one individual who was re-infected with HCV.

Conclusions:
Our results demonstrate a significant increase in the number of individuals screened for HCV and excellent LTC for those diagnosed with active infection. A nuanced demand management approach to repeat ED testing may be warranted in individuals who are difficult to engage or at high risk of re-infection.

238: Low-dose valganciclovir is safe and effective for CMV prophylaxis in high-risk (D+/R-) patients following liver transplantation

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Background
International guidelines on management of CMV in solid organ transplant (SOT) recipients recommend universal prophylaxis and pre-emptive therapy as the main approaches for prevention of CMV reactivation and infection post-transplant. The accepted dose of valganciclovir for CMV prophylaxis is 900mg OD however, some centers advocate using low-dose prophylaxis (450mg OD) to minimise adverse drug reactions (ADR). This comprehensive retrospective 5-year review analyses the impact of low-dose valganciclovir prophylaxis administered post-operatively for 3 months to all at-risk liver transplant recipients (CMV D+R+, D+R-, D-R+) in the National Liver Unit, St. Vincent's University Hospital, Ireland.

Methods
Patient health records were reviewed, extracting demographic information, transplant specifics, and CMV-related data, forming the basis for a comprehensive analysis.

Results
Two hundred and forty-five liver transplants were carried out during the study period (2018 to 2022 inclusive), with two instances of re-transplantation. Demographically, the majority of transplants were elective (90.6%), and alcoholic cirrhosis was the predominant indication (n=54, 22%). Of 243 patients, only 3.7% (n=9) patients had evidence of CMV disease (CMV syndrome or tissue invasive disease); the majority (n=8) having CMV D+/R- serostatus. Seven occurred outside period of prophylaxis. All were treated successfully with targeted anti-viral therapy. A further 23 patients had CMV incidentally detected by PCR, with 10 patients receiving treatment for asymptomatic viremia. CMV D+/R- (n=16) was the most common serostatus in the asymptomatic cohort.

Conclusions
The study suggests that low-dose valganciclovir may be safely used for CMV prophylaxis following liver transplantation, including high-risk recipients.