



FEDERATION OF INFECTION SOCIETIES CONFERENCE 2023

POSTER ABSTRACT BOOK



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Category: Antimicrobial agents

P001

Antiparasitic effect of *Uraria picta* extract mediated synthesized silver nanoparticles on *Cryptosporidium parvum*.

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Abstract

The unexpected onset along with the rapid spread of infections caused by *Cryptosporidium*, in addition to the regular development of resistance and ineffectiveness to typical drugs, emphasize the urgent requirement for alternative drugs to kill or inactivate infectious pathogens. Green silver nanoparticles generated using plant extracts demonstrate resilient antimicrobial properties, as a result of recent advances in nanotechnology.

The synthesis of silver nanoparticles was carried out in this study by employing the aqueous whole plant extract of *Uraria picta*, along with a reducing solution containing 1 mM silver nitrate (AgNO₃) and microwave irradiation. The silver nanoparticles synthesized through green methods were characterized using various techniques, such as UV-Vis's spectroscopy, Energy dispersive X-ray spectroscopy (EDS), Fourier Infrared Spectroscopy (FT-IR), Transmission Electron Microscopy (TEM) and antioxidant activity. Anti-cryptosporidial activity of green silver nanoparticles were carried out on *Cryptosporidium parvum* (procured from University of Arizona) oocysts by treating them with UP-AgNPs (500µg/ml and 250µg/ml) for 24h and then allowing them to grow on MDBK cell line monolayer for 48h.

Morphologically, the nanoparticles were spherical in shape with a molecule size of 20-40 nm. The presence of potential biomolecules necessary for the reduction of silver ions is demonstrated by FT-IR spectral analysis of the extract as well as the nanoparticles. These green silver nanoparticles are effective in inhibiting the viability (more than 70%) of *Cryptosporidium parvum* oocysts with very high potential.

The present study suggested that *Uraria picta* mediated synthesized silver nanoparticles have great potential in development of new anti- cryptosporidal drugs.

P002

Treatment outcomes in candidaemia and/or invasive candidiasis among patients receiving rezafungin or caspofungin while the fungal culture was still positive

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Abstract

Background

ReSTORE (NCT03667690) demonstrated non-inferiority of rezafungin against caspofungin for Day(D) 30 all-cause mortality (ACM) and D14 global cure in subjects with candidaemia/invasive candidiasis (C/IC). This analysis examined ReSTORE data for subjects with a positive culture proximal to randomisation to understand potential impact on efficacy outcomes.

Methods

ReSTORE comprised a global, randomised, double-blind, double-dummy, Phase 3 noninferiority trial. Adults with C/IC received rezafungin once-weekly intravenous infusion (Week 1: 400 mg; Weeks 2–4: 200 mg) or once daily caspofungin (D1: 70 mg; D2–28: 50 mg) for ≥ 14 days and ≤ 4 weeks. This post-hoc analysis examined data for patients that had positive blood culture ≤ 12 hours prior to or ≤ 72 hours following randomisation, or positive culture from another normally sterile site ≤ 48 hours prior to or ≤ 72 hours after randomisation. Efficacy endpoints included D30 ACM, global cure and mycological response on D5 and D14.

Results

The analysis included 38 participants treated with rezafungin and 46 subjects receiving caspofungin. D30 ACM rate was 26.3% (rezafungin) and 21.7% (caspofungin), with a difference in outcome (95% CI) 4.6 (-13.7, 23.5). Data review committee (DRC) evaluated D14 global response was 55.3% with rezafungin and 50.0% with caspofungin (95% CI: 5.3 [-16.1, 26.0]). DRC-assessed D5 mycological response was 71.1% (rezafungin) and 50.0% (caspofungin). The between-group difference (95% CI) was 21.1 (-0.2, 40.2).

Conclusions

Assessment of outcomes in trial subjects with a positive culture proximal to randomisation showed that D30 ACM and D14 global response remained comparable treatment groups.

P003

Delafloxacin as a single oral antibiotic in a complex polymicrobial prosthetic joint infection

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Abstract

In February 2021, a 72-year-old man underwent left quadriceps primary repair of tendon using permanent prosthesis after total knee replacement. In March 2021, the patient presented with a primary surgical site infection and was prescribed 12-weeks of PO doxycycline and rifampicin against coagulase-negative Staphylococci. 6 weeks later, the patient presented with a complex polymicrobial PJI needing IV vancomycin, oral ciprofloxacin and metronidazole. The patient underwent multiple debridement and removal of prosthetics. Swab and tissue samples identified *Enterococcus faecalis*, *Klebsiella pneumoniae*, *Escherichia coli*, Coagulase negative staphylococci and *Citrobacter koseri*. Off-label use of PO delafloxacin was considered to reduce polypharmacy burden, avoid prolonged OPAT and decrease hospital stay. Minimum inhibitory breakpoints demonstrated sensitivity against all identified pathogens. The patient started oral delafloxacin 450mg twice daily for 6 weeks and was discharged home after 6 days to complete the course. Clinical review one-month post-discharge showed no sign of infection. No adverse events or readmission due to this infection have been reported and the patient underwent planned complex plastic re-implantation orthopaedic surgery in 2022.

Discussion: This case presents the first successful use of delafloxacin in a polymicrobial PJI with good bioavailability and efficacy against all isolated organisms. Use of delafloxacin as a monotherapy decreased the likelihood of drug interactions and simplified patient treatment. Oral switch facilitated earlier discharge from hospital which reduced burden on healthcare systems and resulted in a better patient outcome.

P004

Systematic evaluation of the applicability of Staphylococcus aureus bacteraemia clinical trial findings to a real-world patient cohort

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Abstract

Background

As new treatment strategies for Staphylococcus aureus bacteraemia (SAB) are investigated, an understanding of how clinical trial findings relate to 'real-world' patients is increasingly important.

Methods

We retrospectively collected data on 458 consecutive adults with SAB in NHS Lothian (20/12/2019 – 23/08/2022); referred to as the Edinburgh cohort. Randomised controlled trials (RCT) of SAB medical therapy were identified by a systematic literature review. We then applied the RCT inclusion and exclusion criteria to the Edinburgh cohort to identify potentially eligible real-world patients.

Results

We included seven RCTs that recruited both MSSA and MRSA bacteraemia in adults. Interventions investigated were novel therapies (n=3), alternative antimicrobials (n=2), antimicrobial combinations (n=1) and IV antimicrobial duration (n=1). A median of 44.1% (range 17.0-88.9) of patients from the Edinburgh cohort were potentially eligible for inclusion in the included trials. In comparison to the trial populations, these patients often differed in prevalence of key co-morbidities, median Charlson Comorbidity Index, proportion with prosthetic material in situ, and proportion with unknown source of bacteraemia. Mortality was higher in potentially eligible real-world patients.

Conclusions

The process of recruitment to RCTs selects for different patient groups compared to real-world clinical practice. Despite application of the same inclusion/exclusion criteria, real-world patients may have a higher risk of treatment failure. This is especially important when considering implementation of early

oral switch therapy. The application of RCT findings should be done cautiously, with prospective data collected to determine if the outcomes of real-world implementation match those expected from the RCT.

P005

The use of intravenous cefiderocol in the treatment of OXA -48 *E.coli* ventriculitis.

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Abstract

Background:

Antimicrobial resistance is recognised as a major cause of morbidity and mortality. One of the most worrying components of this is carbapenem resistance. OXA-48 is a carbapenemase with limited treatment options which includes the recently licenced drug cefiderocol. Cefiderocol is a parenteral siderophore cephalosporin with documented efficacy against OXA-48 isolates in recent APEKS-NP and CREDIBLE-CR trials. It therefore has a licence for treatment in susceptible urinary tract and pneumonia infections.

Case:

A 44 year old male was admitted for the elective endoscopic resection of an anterior skull base chordoma. Persistent CSF leak developed requiring multiple endoscopic repairs and abdominal fat grafting. He also developed recurrent ventriculitis with a variety of organisms including MRSA, *C. albicans* and OXA-48 *E. coli*. The OXA 48 *E. coli* was first treated with IV co-trimoxazole and intrathecal gentamicin but unfortunately recurred. The patient was switched to IV cefiderocol, IV ciprofloxacin and intrathecal gentamicin. With a 3 week course of treatment the CSF was sterilised and there was improvement in symptoms.

Discussion:

Cefiderocol can be used against OXA-48 carbapenemase, but it has not been described in ventriculitis infections. The antibiotic sensitivity profile for this OXA-48 *E.coli* in the CSF showed sensitivity to cefiderocol, gentamicin and ciprofloxacin. There is a lack of published data on the efficacy of cefiderocol in the management of central nervous system infection. Our experience suggests that cefiderocol may be an option in the management of healthcare-associated ventriculitis caused by carbapenemase producing Enterobacteriaceae.

P006

***In vitro* antifungal activity of the novel quorum sensing compound, Lactam, against *Candida albicans* infections**

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Abstract

Candida albicans is the most important fungal opportunistic pathogen, which has the ability to cause superficial infections or disseminate to the bloodstream and internal organs causing serious illnesses. Only few classes of antifungal agents are currently available, and they have their own drawbacks. This study aims to investigate at a transcriptional level the effect of the novel quorum sensing compound, lactam 448, on *Candida albicans* planktonic cells. Our work demonstrated that the fungicidal effect of Lactam on *Candida albicans* planktonic cells and biofilms appeared to be related to increased vacuoles membrane permeability, with consequent accumulation of reactive oxygen species, and inhibition of filamentation.

Our finding enhanced the understanding of the antifungal activity of Lactam 488 and the possible underlying mechanisms of action at the molecular level, supporting Lactam as a potential agent in preventing and killing biofilms caused by *Candida albicans* pathogen.

P007

Does high dose rifampicin +/- a quinolone increase the risk of drug induced hepatitis (DIH) in tuberculosis?

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Abstract

Introduction

Mortality rates for tuberculous meningitis (TBM) remain high despite appropriate treatment. In April 2021, following MDT discussion and concern about undertreatment in this patient group, Cardiff and Vale (CAV) changed its practice for the treatment of TBM to consider higher-dose rifampicin and/or a fluoroquinolone replacing ethambutol.

Methods

A retrospective review of all patients treated for active tuberculosis in CAV was performed between August 2019 to August 2021. DIH=ALT >ULN. Comparisons were performed using multivariable logistic regression accounting for age and baseline ALT.

Results

72 patients treated:

- 60 received standard treatment (including 4 TBM) (6 having DIH, 3 interrupting treatment).
- 4 (TBM) received high-dose rifampicin plus fluoroquinolone (4 having DIH, 2 interrupting treatment (OR 19.2 [1.07-359], p=0.02).
- 3 received extra rifampicin only (1 having DIH requiring treatment interruption).
- 5 received a quinolone only (0 suffering DIH).

All TBM patients survived without disability.

Patients who had DIH were older (median 36 vs 43 years, p=0.10). Patients who interrupted treatment due to DIH were older (median 38 vs 53 years, p=0.04).

Patients who had DIH had higher baseline ALT (median 19 vs 28 IU/L, p=0.07). Patients who interrupted treatment had higher baseline ALT (median 21 vs 51 IU/L, p=0.06).

High-dose rifampicin and quinolone combination was associated with DIH requiring treatment interruption (OR 27 [2.1-620] p=0.01).

Discussion

DIH occurred in all those receiving high-dose rifampicin and quinolone combinations. However, the sample size was small and confounding by indication in critically unwell patients limit the generalisability of these findings.

P008

Towards overcoming antimicrobial resistance by assessment of the role of iron in the growth of *Klebsiella pneumoniae*.

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Abstract

Bacterial antimicrobial resistance (AMR) is a major global problem. As a result, investigations into the role of siderophores, natural iron chelators produced by microbes under iron-limiting conditions, are underway to investigate if these small molecules can be used to attenuate AMR by either (i) limiting the amount of available iron to bacteria or (ii) using them as carriers for 'Trojan-horse' antibiotics as demonstrated by the commercial antibiotic Cefiderocol. Using Gram negative pathogen *Klebsiella pneumoniae* as a model species, we tested the growth of this species in a minimal media, free of ferrous iron, in the presence of a variety of iron chelators. We observed that unferrated triacetylfusarinine C (TAFC), a siderophore native to *Aspergillus fumigatus*, inhibited *K. pneumoniae* in a microtiter plate assay ($p < 0.005$) but showed little effect when scaled up to liquid culture assays. Conversely, ferrated TAFC (FeTAFC) significantly promoted growth of *K. pneumoniae* when compared to the control in both microtiter ($p < 0.05$) and liquid ($p < 0.005$) culture. The bacterial siderophore deferoxamine B (DFO B) promoted the growth of *K. pneumoniae* in microtiter and liquid culture, both ferrated ($p < 0.05$) and unferrated ($p < 0.05$). We conclude that siderophores not native to *K. pneumoniae* can be used to limit the available iron in an environment or be suitable candidates for 'Trojan-horse' antibiotics as seen in literature.

P009

An antifungal polymer, HB-PNIPAM-AmB, effective against *Candida auris* and *Candida albicans* biofilm

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Abstract

Candida auris is an emerging fungal pathogen with a multi drug resistance (MDR) profile, and is on the WHO fungal priority pathogens list, while *Candida albicans* is a commensal yet opportunistic pathogen and is often implicated in Candidiasis of the mucosal tissues. Patients with immunocompromised health are particularly at risk of infection with either. One virulence trait of *Candida* is their ability to adhere to biotic and abiotic surfaces, and form complex biofilms which have lower sensitivity to antifungal drugs.

Amphotericin-B (AmB) is a widely used antifungal. However, its toxic effects on human cells restrict its use; even at low concentrations, it has adverse side effects including cytotoxicity and dose-dependent nephrotoxicity. The rise in AmB resistance among fungal strains additionally raises the concern of dose-dependent toxicity during medication of severe fungal infections.

We previously reported on a polymer, Hyperbranched Poly-(isopropyl acrylamide) (HB-PNIPAM) functionalized with AmB (HB-PNIPAM-AmB) which has antifungal activity against AmB-sensitive strains of planktonic *C. albicans*. Here we show that HB-PNIPAM-AmB additionally has antibiofilm activity against *C. albicans*, and is also active against two strains of both planktonic and biofilm *C. auris*. Previously, a significant reduction in toxicity to human corneal and renal cells in comparison to AmB alone was also reported for HB-PNIPAM-AmB. This study additionally indicates no cytotoxicity of HB-PNIPAM-AmB to human dermal fibroblasts or keratinocytes. The anti-biofilm properties and reduction in cytotoxicity of HB-PNIPAM-AmB compared to AmB suggest it could serve as a potential alternative to pre-existing AmB drug formulations for MDR fungal pathogens.

P010

Tertiary centre experience of using Imipenem/relebactam/cilastatin for multi-drug resistant *Pseudomonas* spp respiratory tract infection.

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Abstract

Background: As a tertiary centre managing patients with complex respiratory infections (i.e. Cystic Fibrosis(CF), bronchiectasis, severe respiratory failure requiring extra-corporeal oxygenation (ECMO) and heart/lung transplant) we often have reduced treatment options along with limited real-world evidence to guide practice. Currently in our trust, imipenem/cilastatin/relebactam is only indicated in patients with MDR-*P.aeruginosa* infections (i.e. when Ceftolozane/Tazobactam or other anti-pseudomonal antibiotics cannot be used).

Aim: To evaluate the clinical and microbiological outcomes in patients who received imipenem/cilastatin/relebactam in our trust.

Methods: Retrospective observational study looking at adult patients who received ≥ 1 courses of imipenem/cilastatin/relebactam from 2021-present. Data pertaining to comorbidities, microbiological, radiological and clinical outcomes were collected.

Results: A total of 32 patients: 11 with CF, 13 non-CF bronchiectasis, 5 ECMO patients and 3 lung transplant patients were included. 30 patients received the drug due to MDR *P.aeruginosa* infection and 2 due to reported side effects to other antibiotics. The average course length was 14 days. Outcome description: 24/32 had good clinical outcome with reduction in further exacerbation frequency; 4/32 had a good initial response but was not sustained beyond 1 month; 4/32 had no improvement with further deterioration. Microbiological culture conversion was maintained beyond 3 months in 17/32 patients. One patient suffered an adverse drug event.

Conclusion: We present a real-world experience of using imipenem/cilastatin/relebactam in patients with complex respiratory clinical and microbiological background. Clinical improvement was noted in the majority of cases, but microbiological culture conversion was noted in 53%.

P011

The data shows Dalbavancin is safe, so should we be worried about long lasting drug reactions? A retrospective review of Dalbavancin use and reactions at Hull University Teaching Hospitals (HUTH)

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Abstract

Background:

Dalbavancin is a novel second-generation lipoglycopeptide active against Gram-positive organisms and its popularity in use has risen due to its long half-life and attractive dosing regime. However there is paucity of data surrounding potential drug reactions leading to apprehension among some clinicians in case of reactions. There have been no reports of direct infusion related reactions but there have been some of subsequent adverse events including rashes. We have recently seen two reactions to Dalbavancin and this prompted a review of the whole cohort to see how common drug reactions were and what form they took.

Methods:

We undertook a retrospective review of all patients receiving Dalbavancin via the OPAT service or inpatient wards over a 4 year period. The indication for the Dalbavancin was documented as well as any reactions.

Results:

We have treated 188 patients with Dalbavancin over 4 years. Our use of Dalbavancin has been predominantly (91.5%) off label with 1500mg on days 1 and 8. Only 2 (1.06%) patients out of the 188 had a reported reaction. Reassuringly both of these reactions were short lived: one, post infusion rigors, pyrexia and vomiting resolved within 2 hours with hydrocortisone and antiemetic's the other a rash settled within 72 hours with anti-histamines.

Conclusion:

In conclusion, in our experience Dalbavancin was very well tolerated and its shown that drug reactions are relatively rare and reassuringly mild and short lived despite its long half-life. This should reassure any clinician who still have safety concerns about long-acting glycopeptides.

P012

Microbiotoxicity: A framework for considering the unintended harms of antibiotics on a patient's microbiome

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Abstract

Background: The microbiome (the overall host microbial community) plays an integral role in human health, including production of vitamins, short-chain fatty acids, hormones, and neurotransmitters, and regulation of adaptive immunity, metabolism and barrier integrity. Inappropriate antibiotic use is not only driving a global crisis of antibiotic resistance, but also microbiome disruption.

Aim and methods: We review the evidence to date and propose the novel term 'microbiotoxicity' as part of a framework for considering antibiotic-associated microbiome disruption.

Results: Antibiotics cause a reduction in microbial biomass and diversity (especially health-associated bacteria like Bifidobacteria and Bacteroides), and selection for potential pathogens (e.g. Enterobacterales, Clostridium and Candida) and antimicrobial-resistant organisms. These changes can take up to a year to resolve, and microbiotoxic effects are greater for broad-spectrum, lengthy, repeated or combination antibiotic courses. Growing evidence has linked antibiotic-associated microbiome disruption with downstream adverse health outcomes including obesity, asthma, diabetes, inflammatory bowel disease and cancer, particularly if antibiotics are received in infancy. Animal models support a causal role for antibiotics in ill-health, with antibiotics driving mucosal and systemic inflammation. Although microbiotoxic effects may be entirely justified and unavoidable when treating severe infections, it is important to recognise that current antibiotic prescribing guidelines rarely (if ever) consider microbiome bystander effects.

Conclusions: We urge clinicians to weigh the microbiotoxic effects of antibiotics against their intended benefits, and offer this framework to facilitate prescribing decisions, communication with patients, and stewardship activities. Further work is needed to investigate the utility of implementing this framework in clinical practice.

P013

Evaluation of *in-vitro* activity of double beta-lactam 'therapy' in *E. coli*- what is the association between 'synergy' and *in-vitro* susceptibility?

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Abstract

Background

Antimicrobial resistance is a leading cause of morbidity/mortality, with combination antibiotics a potential treatment strategy.

Aim

Determine if combinations generating synergy *in-vitro* are associated with improvement in *in-vitro* clinical susceptibility.

Methods

We determined the relationship between double beta-lactam therapy (10 antibiotics) against 7 *Escherichia coli* strains of variable resistance.

The minimum inhibitory concentration was determined individually, and subsequently in combination, using the MTS™ 'cross' synergy method (Liofilchem,2012).

Results were analysed according to EUCAST clinical breakpoints to determine if synergistic combinations correlated with a potentially improved *in-vitro* susceptibility.

Results

86/630 (13.7%) combinations showed synergy; 408/630 (64.7%) = additive; 136/630 (21.6%) = indifferent. No antagonism was identified. Synergy was commonly detected in ESBL producers (32% combinations), but less in CPEs (2% combinations) and fully sensitive isolates (4% combinations).

346/630 combinations were 'non-S/S' in monotherapy (i.e. phenotypic susceptibility improvement was possible in combination). 140/346 were R/R, R/I or I/I in monotherapy (most resistant). 31/140 showed improvement in EUCAST susceptibility to ≥ 1 S in combination. Synergy was more common in combinations that improved EUCAST susceptibility (8/31 vs. 78/599, Chi-squared, $p=.0432$).

Ceftazidime/avibactam + amoxicillin was the combination most commonly associated with synergy (6/7 isolates; 12/86 synergistic combinations). Ceftazidime/avibactam was most commonly present in

synergistic combinations (21/86), followed by Co-amoxiclav (13/86) and PipTaz/Aztreonam/Piperacillin (all 9/86).

Conclusions

Synergy was most commonly detected in ESBL producers with most synergistic combinations containing ≥ 1 beta-lactamase inhibitors. This only leads to an improvement in *in-vitro* susceptibility relatively infrequently however, and is highly 'bug-drug-drug' combination dependent.

Category: Antimicrobial resistance

P014

Antibiotic Resistance Genes & Heavy Metals Screening in Up-stream and Down-stream of Wadi Hanifah Valley in Riyadh, Saudi Arabia

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Abstract

Antibiotics resistance genes (ARGs) distribution in surface water is not influenced by the presence of antibiotics that derived from discharge of wastewater or other contamination sources, but it is also influenced by the presence of other agents such as pharmaceuticals, biocides, and heavy metals. The main objective of this study was to screen heavy metals levels and the ARGs in upstream and downstream sites of Wadi Hanifah valley in Riyadh, Saudi Arabia. A total of eighteen surface water sites along the valley were targeted for samples collection. ARGs related to main antibiotics classes were detected using PCR technology. The qualitative of ARGs (*bla*NDM-1, *mecA*, *tet*(M), *tet*(B), *ampC*, *VanA*, *mcr-1*, *erm*(B), *aac*(6')-Ie-aph(2'')-Ia, *SulIII*, *CatII*, *dfrA1*) were evaluated in our tested samples. Next, the levels of lithium (Li), beryllium (Be), chromium (Cr), copper (Co), arsenic (As), cadmium (Cd), sulfate (Su), mercury (Hg), and lead (Pb) were then assessed using ICPMS. It was found that the levels of erythromycin, sulfamide and chlorophenols ARGs [*erm*(B), *SulIII* & *CatII*] were the highest in all the tested samples, while 2 ARGs (*mecA* & *mcr-1*) were not detected. The levels of the screened heavy metals did not exceed the WHO maximum limit. The current study provides a brief insight on the presence of heavy metal and ARGs composition in the surface water and this will aid in the monitor and risk assessment of ARGs spreading in surface water in the future.

P015

Isolation, Identification and Antimicrobial Susceptibility of the Bacterial spp. from *Hyalomma dromedarii* infesting Camels in Al-Jouf Province, Saudi Arabia

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Abstract

Ticks and tick-borne emerging diseases are difficult to control mostly due to the lack of surveillance programs and diagnostic issues. Antimicrobial resistance (AMR) is one of the most serious public health threats today, because AMR has been accelerated by the overuse and misuse of antimicrobials. The present study aims to isolate bacteria from camels' tick *Hyalomma dromedarii* in Aljouf province, Saudi Arabia to identify and determine these isolates' antimicrobial susceptibilities. Forty nine (49) ticks were collected from dromedary camels and morphologically classified as *Hyalomma dromedarii*. Ticks were then homogenized and plated, which resulted in the isolation of 55 bacteria. The results showed that the bacterial isolates belong to 20 different species. About 71% of the isolates were identified as Gram-positive bacteria comprised of 11 species (*Staphylococcus sciuri*, *Staphylococcus lentus*, *Staphylococcus pseudintermedius*, *Staphylococcus haemolyticus*, *Staphylococcus vitulinus*, *Staphylococcus aureus*, *Staphylococcus hominis*, *Staphylococcus epidermidis*, *Aerococcus viridans*, *Enterococcus casseliflavus*, *Streptococcus equi* ssp *zooepidemicus*), while 29% of the isolates were Gram-negative bacteria comprised of 9 species (*Klebsiella pneumoniae* ssp *ozaenae*, *Klebsiella pneumoniae* ssp *pneumoniae*, *Pseudomonas aeruginosa*, *Pseudomonas putida*, *Pseudomonas fluorescens*, *Stenotrophomonas maltophilia*, *Sphingomonas paucimobilis*, *Cronobacter sakazakii* group, *Rhizobium radiobacter*). The most prevalent isolate within the total samples was *Staphylococcus lentus* (22.45%), followed by *Staphylococcus pseudintermedius* (18.37%) and *Sphingomonas paucimobilis* (16.33%). Antimicrobial susceptibility test indicated the presence of significant levels of resistance to different antimicrobial agents. This is the first study that investigates the role of the hard tick as potential reservoirs for AMR pathogens.

P016

Prevalence, Serovars, and Antimicrobial Susceptibility of *Salmonella* Isolated from Eggs in Local Markets in Riyadh, Saudi Arabia

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Abstract

Contaminated eggs and egg products are significant sources of various *Salmonella* serovars that can cause outbreaks and the spread of antimicrobial resistance (AMR). This study aims to assess the prevalence of *Salmonella*, test antibiotics susceptibility, and evaluate total bacterial counts in eggs from local markets in Riyadh, Saudi Arabia. Over one year (Apr 2021- Apr 2022), 260 egg samples were collected from various local markets. Samples were tested to detect *Salmonella* following ISO 6579-1:2017. Positive *Salmonella* was isolated and identified, and their antibiotic susceptibility was tested against 15 antibiotics by micro-broth dilution method. The total bacterial counts on eggshells and liquid were evaluated using plating counts. The prevalence of *Salmonella* was found to be relatively low (18/260). Among the samples, the prevalence on eggshells was (12/260), while in liquid was (8/260). The most common serovar was *S. Enteritidis*, accounting for 22 % of the positive samples, followed by *S. Heidelberg* at 17%. *S. Typhimurium*, *S. Bareilly*, and *S. Infantis* were identified in 13% of the positive samples, while *S. Minnesota* was found in 9 %. Six isolates exhibited resistance to 3 or more of the 15 antibiotics. The most resistant isolate was *S. Infantis*, resistant to 9 antibiotics. The observed range of average total aerobic counts of bacteria on eggshells and liquid was 1-5 and 0-5 logarithms CFU/mL, respectively. This study provides new information on *Salmonella*'s prevalence and AMR in eggs sold at local markets in Riyadh city. This leads to better monitoring of salmonellosis caused by eggs and managing AMR.

P018

Biogenic potentiality of cationic Antimicrobial peptides isolated from mangrove *Streptomyces* sp.

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Abstract

Abstract

Streptomyces species are the dominant source of microorganisms involved in the production of broad-spectrum peptide based antibiotics and anticancer molecules used by many pharmaceutical and biotechnological sectors. The present study was aimed to isolate, screening, characterization and production of Antimicrobial peptide compound isolated from *Streptomyces* species using mangrove soil sediments. Mangrove soil samples were collected from four different locations of Mangalore coastal area. The soil was pre-treated for the enrichment of *Streptomyces* and cultured with the use of five specialized media which exhibited distinctive morphological appearance, biochemical test and phylogenetic features. Spore chain arrangement was examined by slide culture method and internal spore bearing hyphal structure was identified under Field emission-scanning electron microscope. The cross streaking method was used to select potential *Streptomyces* strains, which were then subjected to intracellular buffer extraction and evaluated against test pathogenic bacterial strains to determine antibacterial efficacy. The intracellular cationic Antimicrobial peptide compound of *Streptomyces minutiscleroticus* and *Streptomyces albogriseolus* were purified to homogeneity by CM-cellulose Ion exchange chromatography technique. A prominent peak fractions was selected based on significant antimicrobial activity that was further separated on Reverse phase HPLC. The elution purity of Antimicrobial peptide compound and its molecular mass was determined by LC-MS analysis.

Our study further demonstrates the bacterial membrane permeabilization effect was analyzed by Field-emission scanning electron microscope. Intracellular peptide compound of *Streptomyces* sp. significantly showed cytotoxicity and DNA damaging effect in MCF-7 cancer cells.

Keywords: Mangrove soil, *Streptomyces*, Spore chain, Antimicrobial peptide compound, Antibacterial activity, Cytotoxicity, MCF-7 cancer cells.

P019

Genetic diversity of clinical strains of *Acinetobacter baumannii* carbapenemases in Morocco.

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Abstract

Introduction: *Acinetobacter baumannii* (*A. Baumannii*) is a Gram-negative opportunistic pathogen, which has recently spread worldwide causing outbreaks of nosocomial infections. Although resistance to carbapenems is emerging in Morocco, few studies have shown the epidemiology of carbapenemase genes in Moroccan health establishments. the objective of this study is to describe the molecular profiles of carbapenemase enzymes in *Acinetobacter baumannii* from clinical isolates.

Methods: Identification and sensitivity to antibiotics were tested by Phoenix 100Dicknson and Api 20 galleries. Simple phenotypic tests were used to detect carbapenemases oxacillinases and Metallo- β -lactamases (MBLs) production including the modified Hodge test and EDTA test. The detection of carbapenemase genes was carried out by multiplex and simplex PCR (polymerase chain reaction).

Results: 140 strains were resistant to carbapenems (93%). the OXA-51 gene and the ISba1 sequence were detected in all isolates (100%), the OXA-23, OXA-58 and OXA-24 gene were detected in 89%, 7% and 1% of the isolates respectively. MBL genes were predominated by VIM (56%), followed by SIM (39%), GIM (37%), SPM (13%), IMP (11%) and NDM (4%). while GES were not found in any isolates.

Conclusion: Our study showed a high frequency of carbapenem resistance in *Acinetobacter baumannii*, as it reported a great molecular diversity of genes coding for carbapenemase, dominated mainly by carbapenemase ISba1 /OXA-23, which is worrying and represents an emerging threat in our hospital.

Keyword: carbapenems, *Acinetobacter baumannii*, carbapenemases, Metallo- β -lactamases, oxacillinases, carbapenemase genes

P020

Association of ciprofloxacin prophylaxis during haematopoietic cell transplantation with incidence of invasive bacterial infections: a role for use in patients with germ cell tumours?

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Abstract

Objectives

Fluroquinolone prophylaxis during haematopoietic cell transplantation (HCT) remains controversial. We aimed to determine its effectiveness in reducing invasive bacterial infections during allogeneic haematopoietic cell transplantation (allo-HCT) and autologous haematopoietic cell transplantation (auto-HCT).

Methods

All admissions for HCT in a tertiary centre between January 2020 and December 2022 (N=400) were studied. Allo-HCT recipients had prophylaxis with ciprofloxacin during chemotherapy-induced neutropenia, while auto-HCT recipients did not. Invasive bacterial infections were recorded when bacterial pathogens were isolated from sterile sites.

Results

Allo-HCT was performed for 43.3% (173/400) of patients, auto-HCT for 56.7% (227/400). An invasive bacterial infection was documented in 31.3% (125/400) of cases. Allo-HCT patients were more likely to have an invasive Gram-positive bacterial infection (23.1% versus 12.8%, $p = 0.01$), while a difference was not observed for invasive Gram-negative bacterial infections (19.7% versus 18.5%, $p = 0.77$). Among auto-HSCT recipients, patients with germ cell tumours had the highest probability (p for trend 0.03) of recording an invasive bacterial infection (12/23, 52.2% 95% Confidence interval [CI] 31.3 – 74, followed by patients with lymphomas (15/40, 37.5% 95% CI 23.1 – 53), multiple sclerosis (6/24, 25% 95% CI 8 – 44%), multiple myeloma (29/131, 22.1% 95% CI 15.3 – 30) and other auto-HCT indications (2/9, 22.2% 95% CI 0 – 57.1%).

Conclusions

Ciprofloxacin prophylaxis was associated with reduced incidence of Gram-negative invasive bacterial infections in allo-HCT recipients. HCT recipients due to germ cell tumours, not receiving ciprofloxacin prophylaxis, recorded the highest incidence of invasive bacterial infections and represent a possible target group for this intervention.

P021

Detection and quantification of antimicrobial genes in hospital air

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Abstract

Introduction

Antimicrobial resistance transmission occurs through environmental contamination, including via the airborne route¹. During an outbreak of carbapenemase-producing Enterobacteriaceae (CPE) infection we quantified the burden of AMR in hospital air in the affected ward and three other clinical areas (an unrelated ward with no CPE outbreak and two operating theatres).

Method

An air sampler capturing inspirable particles (1 - 15µm) (AerosolSense, ThermoFisher) sampled each area for 2 consecutive 24 hour periods. High throughput parallel polymerase chain reactions for 14 commonly encountered AMR genes, including those identified in the CPE outbreak, was undertaken using previously described protocols². Parallel detection of 62 microorganisms was undertaken but not reported in detail here.

Results

AMR genes were detected in all locations, with more detections and lower Ct (i.e. higher number of gene copies) in wards compared to theatres. The CPE outbreak gene (NDM-1) was detected in the outbreak ward and two other areas (ward and theatre). There was a strong correlation between the number of airborne AMR genes and pathogens detected at each location ($r=0.71$, $p=0.05$ by Pearson's r test).

Discussion and conclusions

AMR genes could be detected in all settings, with a strong correlation between microbial bioaerosol and AMR genes. The outbreak-related gene was detected in the affected ward but also in other areas. Airborne transmission of AMR organisms or naked genes is possible, and monitoring air is feasible.

References

1. Review of Airborne antimicrobial resistance. Environment Agency 2020 (<https://www.gov.uk/government/publications/review-of-airborne-antimicrobial-resistance>)
2. Conway-Morris, A, et al. Clin Infect Dis. 2022 24;75(1):e97-e101.

P022

What lurks beneath? Wrist watches, rings and fingernail enhancements worn by healthcare workers are potential sources of antimicrobial resistant pathogens

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Abstract

Background: Hand hygiene guidelines prohibit wearing of jewellery and/or fingernail enhancements by healthcare worker (HCWs) in clinical areas. However, recent audits have demonstrated that some HCW do not follow these recommendations. We prospectively obtained swabs from HCW hands wearing jewellery and/or fingernail enhancements (12/6 - 14/7/23).

Methodology: Consenting HCWs in clinical areas wearing wristwatches, rings, or fingernail enhancements were included. No identifiable information was recorded. Charcoal swabs were incubated in nutrient broth overnight, and then sub-cultured onto non-selective agars (blood/McConkey) and selective agar for the detection of MRSA (methicillin resistant *Staphylococcus aureus* (MRSA), vancomycin resistant enterococci, extended-spectrum B-lactamases and carbapenemase-producing Enterobacterales). Any pathogens were identified by MALDI-TOF MS.

Results: Of 130 swabs collected from 122 HCWs, 68 were from wristwatches, 34 from rings and 28 from fingernails. In addition, 15 control swabs were taken from 15 HCWs without jewellery/nail enhancements, which cultured coagulase-negative staphylococci only. MRSA was cultured from one swab from a fingernail enhancement. Of 51 swabs taken from 44 HCWs enteric organisms/non-commensals were cultured across all items including; *Pseudomonas sp* (n=2), *Stenotrophomonas maltophilia*(n=1), *Klebsiella oxytoca* (n=1), *Bacillus sp* (n=42), *Enterococci* (n=1), *Enterobacterales* (n=6) and *Viridans Streptococci*(n=9).

Discussion: Of HCWs wearing hand or wrist jewellery or nail enhancements, 41% yielded potential pathogens, including one with MRSA. These results will inform hand hygiene quality improvement programmes to inform HCWs about the potential risk of pathogen cross-transmission when jewellery and/or fingernail enhancements are worn in clinical areas.

P023

Evaluation of E-test use on anaerobic organisms isolated from clinical samples - Audit in a tertiary centre.

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Abstract

Background: Antimicrobial resistance (AMR) is well-recognised as a significant threat to public health globally. Controlling the AMR spread entails accurate, rapid detection of drug resistance and appropriate antimicrobial treatment.

Aim: To evaluate the use of E-test for antimicrobial susceptibility testing (AST) of pathogenic anaerobic isolates in line with the local microbiology lab SOP in NHS Grampian and EUCAST, evaluate the cost implications and monitor the resistance pattern changes to optimize the empirical antimicrobial treatment.

Methods and results: A total 100 anaerobic bacteria strains were isolated from a variety of clinical specimens (total 745 samples) collected at ARI hospital during February and March 2023. The samples included tissue, intra-abdominal fluid, aspirate of abscess, blood culture and wound swabs. E-tests of metronidazole, clindamycin and penicillin were used. The most represented genus was *Bacteroides* (32%) followed by *Finegoldia magna*, *Prevotella* and *Peptostreptococcus anaerobius* (26%,15%,10% respectively).

A Total of 57 anaerobes required AST, of which 58% (n=33) were performed by disc diffusion and 42% (n=24) were performed by E-test. The result indicates an increased use of E-test in AST of clinically significant anaerobic isolates. This could reflect increase in isolation of anaerobic pathogens that don't have defined MIC criteria by EUCAST. This has a financial and time impact on the lab protocol, utilising the more expensive E-test over the cheap disc diffusion method.

Recommendation: Continue observing the types of anaerobic isolates from clinical specimens to identify epidemiological and pathological patterns to help modify our local lab protocol to more efficient and cost effective protocols.

P025

Clinical unmet needs to address Antimicrobial Resistance (AMR). An innovative approach to procurement by the RaDAR-PPI project

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Abstract

RaDAR-PPI is a European Commission co-funded project targeted at the urgent need for rapid detection and control systems for antimicrobial resistance (AMR) in the healthcare environment through the adoption of innovation procurement.

The RaDAR Buyers Group is composed of four public organisations from Spain, France and Italy who are implementing a cross-border collaborative procurement of innovative solutions to address the challenges posed by AMR. The RaDAR consortium also includes five supporting entities with expertise in scientific and procurement of innovation, including UK partners.

Addressing the challenge began with a comprehensive study to understand the clinical needs to transform AMR management and improve patient outcomes and quality of care. The buyers carried out an internal multilevel analysis involving key health professionals and stakeholders. Having determined the unmet needs and translated this into the demands of the buyer group, a wider consultation was undertaken with external AMR experts from across Europe.

The conclusion of this exercise is that integrated solutions that enable both the rapid and accurate detection of multidrug-resistant microorganisms (MDROs) and Smart AMR Management, would significantly improve management of MDROs. Such an integrated solution would transform the day-to-day work of health professionals, the control of MDROs and the implementation of stewardship programs, improving the quality of care.

The buyers group have completed a positive market consultation and each is now embarking into a pro-innovation tendering process. The expressed and credible demand of the buyers group can be expected to have a positive impact on the market availability of solutions.

P027

A 5-year review of extended-spectrum beta-lactamase-producing Gram-negative bacteraemia: epidemiology, antibiotic management and outcomes

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Abstract

Introduction:

ESBL-producing Gram-negative bacteria are challenging to cover with empirical antimicrobials. We aimed to evaluate the prescription of empirical antimicrobials in ESBL-bacteraemia and to establish whether time to effective treatment impacted patient outcomes.

Method:

A retrospective review of microbiology reports, electronic prescriptions and discharge letters was undertaken for all adult patients with an ESBL-bacteraemia in NHS Ayrshire and Arran from January 2018 to January 2023.

Results:

191 episodes of ESBL-bacteraemia were identified in 168 patients. 81 patients (42.4%) were known to have been ESBL-colonised in the previous 12-months. Most bacteraemias (85.6%) were due to *Escherichia coli*. 75 (32.3%) episodes were healthcare-associated, 61 (31.9%) were community-acquired and 55 (28.8%) were hospital-acquired. Most episodes (68.6%) were secondary to genitourinary-system infection. Effective empirical antimicrobials were given in 115 episodes (60.2%), resulting in a 12.6% 30-day mortality rate, compared with 14.5% in patients prescribed an ineffective empirical antimicrobial, although this was not statistically significant ($P=.71$). Known ESBL-colonised patients were more likely to be given an effective empirical antimicrobial (72.8% v 50.9%). Mean time to first effective antimicrobial was 12.1 hours in known ESBL-colonised patients and 28.7 hours in patients with new ESBL infection.

Conclusion:

A significant proportion of patients with ESBL-bacteraemia are not given effective empirical antimicrobials, even when previous ESBL-colonisation is known. A delay in effective antimicrobial treatment is associated with increased 30-day mortality. Quicker identification of ESBL- bacteraemia

using rapid antimicrobial sensitivity testing (RAST) or molecular diagnostics could result in more timely effective antimicrobials and infection control measures.

Category: Antimicrobial stewardship

P028

Compliance of Sepsis Update – Use of Cefuroxime vs NEWS2 Score: a clinical audit.

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Abstract

Introduction: Sepsis claims 30 million lives annually. The Academy of Medical Royal Colleges (AMRC) have set out new guidance for the treatment of sepsis of unknown origin using the NEWS2 scoring system. A clinical audit of Lancashire Teaching Hospitals NHS Trust was conducted to check the trust's performance against these standards.

Methods: Data from patients with sepsis of unknown cause who were treated with cefuroxime between 24th to 28th April 2023 was analysed retrospectively.

Results: 31 patients were identified, of which 25 (81%) had a NEWS2 of 0-4, 4 (12.8%) had a NEWS 2 of 5-6 and 2 (6.4%) had a NEWS 2 of 7-8. Adherence to local antibiotic guidance was 58.6%, against 90% advised by the AMRC. However, cefuroxime was only delivered on time in 24 patients (77.4%) which did not meet the standards of the guidance. Furthermore, blood cultures (50%), sputum culture (6.6%), urinary antigens (3.3%) and urine cultures (56%) were not performed up to the 90% mark advised by the AMRC.

Conclusion: Overall, our audit has shown that despite many effective strategies adopted by the Trust to tackle antimicrobial stewardship, there is still room for improvement. We recommend increased responsibilities delegated to the antimicrobial team and pharmacists and future studies to follow up on the findings of this audit.

P029

An Evaluation of the Effect of Introducing the MBT STAR-Cepha IVD Assay on Prescribing Choice at UHP

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Abstract

Antibiotic resistance is a well described threat to public health worldwide. Over the last 20 years the rising rates of resistance observed in Gram negative organisms, especially in the Enterobacterales, has been of grave concern. Inappropriate use of antimicrobials, especially carbapenems, is a contributing factor. Emerging diagnostic technologies may prove useful in the control of resistance. Herein is described a local evaluation of the STAR-Cepha IVD assay and suggestions of how this assay may be employed.

This retrospective evaluation assessed whether the MBT STAR-Cepha IVD assay, using MALDI-ToF technology, was accurate in the same day identification of beta-lactamase producing Enterobacterales. The assay measures the hydrolysis of a benchmark third generation cephalosporin as a surrogate for the presence of ESBL/AmpC beta-lactamase production.

243 consecutive Enterobacterales blood culture isolates were analysed after culture for 24 hours on Columbia blood agar. For combined *E. coli*, *K. pneumoniae* and *K. oxytoca* (n= 218) the assay achieved a sensitivity and specificity of 90% and 98.5% for the identification of cefpodoxime in vitro resistance. The test performance for other Enterobacterales was less impressive.

One can conclude that the assay might be valuable in the rapid de-escalation from empirical carbapenems in those with infections due to Enterobacterales that are not intrinsically AmpC beta-lactamase producers. In this latter group local practice is to use carbapenems regardless of *in vitro* cefpodoxime sensitivity. This test could lead to useful real time antimicrobial stewardship, especially if applied directly to the blood culture as soon as they signal positive.

P030

Empirical antibiotics after prosthetic joint infection surgery: is Gram-negative cover required?

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Abstract

Background.

There is no current consensus about the need for empirical Gram negative (GN) antibiotic cover following surgery for prosthetic joint infection (PJI). Practice at North Bristol NHS Trust (NBT) has been to start IV vancomycin monotherapy pending culture results unless GNs were cultured previously in the joint. To optimise our antibiotic prescribing recommendations, we determined the incidence of GN PJI.

Methods

Data was collated on all deep tissues/fluids culturing GN organisms from a THR or TKR in NBT patients Jan 2018 -March 2022. Only cases with clinically confirmed PJI were included. Antibiotic susceptibility results (EUCAST methodology) for ciprofloxacin, piperacillin-tazobactam and meropenem were recorded.

Results . 31 patients (12 hips, 19 knees) had GN PJI. 14 were mixed infection, 17 were mono-microbial, the most common organism was E coli. One patient had ciprofloxacin-resistant *Campylobacter* PJI all other GN organisms were susceptible to ciprofloxacin, piperacillin-tazobactam and meropenem. 7 patients already had a confirmed GN infection in the joint, or other site at the time of the PJI surgery.

Discussion 31 patients with GN PJI represent approximately 5% of all diagnosed of hip and knee PJI infection during the study period. None of the GN infections were multi-resistant organisms. These findings do not support addition of empirical GN antibiotic cover for all patients following PJI surgery at NBT. Avoiding wide use of empirical GN cover for all patients supports antibiotic stewardship and may be an important contributory factor in the low resistance rate observed in these GN infections.

P031

The impact of Antimicrobial Stewardship (AMS) specialist and non-specialist pharmacy technicians alongside the Antimicrobial Team (AMT) on AMS interventions in secondary care

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Abstract

Background: AMS requires a system-wide approach to fulfil the overall goal of preserving antibiotic effectiveness. The Specialist Antimicrobial Pharmacy Technician (APT) in Princess Alexandra Hospital was employed in Nov'22, Interventions by pharmacy ward teams have been recorded using Microsoft forms since March 2023. AMS training to non-specialised Medicines Management Technicians (MMT) was provided by the APT between March 2023 – June 2023.

Purpose: Showcase interventions made by the technical team including the AMT, APT and non-specialist MMT's after receiving training from the APT.

Method: Created training resources and carried out, face to face sessions with MMT's on the following topics:

- Therapeutic drug monitoring for Gentamicin, Teicoplanin, Amikacin and Vancomycin
- Antibiotic prescription reviews, (indication/duration documentation & appropriate guideline compliance)
- Prompting of appropriate IV to Oral switch using the IVOS decision tool on MicroGuide & IVOS information lanyards.

Results:

Intervention forms completed April 23' – June 23' showed:

- 13% by pharmacists
- 23% by the APT
- 45% by the AMT
- 12% MMT's

Overall 74% were accepted by clinical team.

Prior to training MMT's did not record antibiotic interventions. MMT training feedback was positive; building confidence in challenging prescribers.

Conclusion: The APT appointment has increased AMS interventions, by the specialist APT as well as the MMT's trained. The high acceptance of these interventions shows they were clinically appropriate. MMT education could prove a practical approach for AMS improvements with appropriate training and supervision. Future efforts should focus on the standardization of pharmacy technician education on AMS for both APTs and MMT'S.

P032

Impact of the COVID-19 Pandemic on Antimicrobial Consumption and C.difficile Rates in an Acute District General Hospital

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Abstract

The COVID-19 pandemic has led to many deaths and challenged healthcare systems to breaking point. The overlap of the clinical features of COVID-19 with other respiratory infections has inadvertently led to increased antibiotic usage. Clostridioides difficile infections (CDI) are often a consequence of excessive antibiotic use. We retrospectively studied antibiotic consumption in Defined Daily Doses (DDDs)/1000 admissions from January 2019 to September 2021, and CDI rates from January 2019 to August 2021, of an acute district general hospital in the UK. Our objectives were to observe the patterns in both antibiotic consumption and CDI rates throughout this time and the relationship between the two. Analysis shows an increase in antibiotic consumption by 39.0% from January 2019 to December 2020 ($p < 0.001$). Furthermore, an 86.8% increase in broad spectrum antibiotics consumption was observed ($p < 0.001$). Interestingly, CDI rates decreased by 48.0% in the same time period. These results indicate a reduction in CDI despite an increase in antibiotic usage. This may be due to extensive implementation of infection prevention and control procedures. The impacts of reduced primary care consultations and the significant reduction in elective activities require investigation as potential factors for greater antibiotic consumption in the hospital setting during COVID-19.

P033

Real-time antimicrobial stewardship ward reviews to improve antimicrobial prescribing

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Abstract

Background:

The Trust has a dedicated antimicrobial pharmacy team (APT) providing daily (Monday – Friday) ward rounds and virtual reviews to all in-patients. Computer decision support system (CDSS) linked through Cerner identifies patients on antimicrobial therapy and provide a timely review of antimicrobial prescribing. There is immediate and real time feedback on AMS performance to clinical teams, allowing for continued AMS education to users.

Methods:

A retrospective review of APT activity over two years (June 2021-2023) was analysed. The number of patient interventions made daily, the nature and outcome of the interventions made, and the outcome measures related to antimicrobial stewardship were quantified.

Results:

The team has oversight of 230 patients (110 CWH and 120 WMH) on antimicrobials e day (Monday – Friday). A total of 19,008 and 23,594 documented reviews made over the last two years, respectively. 1,645 high-cost or restricted drugs, 9,287 sterile sites, 912 patients with suspected renal or liver toxicity on treatment and 74 patients with known C. difficile colonisation or infection were reviewed. National CQUIN target for 2022/23 was successfully met during this period, the NHSE contract for reducing broad-spectrum antibacterial usage by 4.5% over the next 5 years has been exceeded with a 22% reduction demonstrated by 2022/23. Use of restricted antimicrobials (quinolones, piperacillin/tazobactam and carbapenems) are reducing from baseline. C. difficile infection rates remain the lowest in the country for an acute teaching hospital.

Discussion:

Real-time AMS feedback using APT and CDSS allows for optimisation of AMS process and outcome measures.

P034

Evaluating the use of digital forms on Antimicrobial Stewardship (AMS) at St George's Hospital In partnership with NHS England and St George's Hospital

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Abstract

Background:

The implementation of digital forms has been encouraged to improve antimicrobial prescribing in secondary care. St George's Hospital implemented the Protected Antimicrobial Forms (PAF) and the Antimicrobial Review Powerform (ARP) to support appropriate use of restricted antimicrobials and antimicrobial review at 48-72 hours. The study objective was to evaluate their use.

Methodology:

This was a two-phase study: a retrospective observational study of the electronic patient records to evaluate how the forms are being used and a survey investigating the experience of the users.

Results:

73 PAFs and 50 ARPs were evaluated. 73/73 PAFs were submitted requesting restricted antimicrobial. From the submitted PAFs 16/73 antimicrobials were prescribed inappropriately and an antimicrobial outside the restricted antimicrobial list could have been prescribed instead. Evaluation of ARP forms revealed that the majority were partially completed (41/50) with 12/41 not specifying guidance used for chosen treatment. Furthermore, each ARP was dismissed, on average, 6.94 times until review.

The survey responses suggested across both forms that prescribers understand why these forms have been put into place (PAF, n=14/21; ARP, n=18/18). However, majority agreed it was time consuming (PAF, n=14/21; ARP, n=11/18), did not fit well with their current practice (PAF, n= 7/21) and did not help make clinical decisions (PAF, n=14/21; ARP, n=10/18).

Conclusion:

The results confirm low engagement with both forms. Prescribers confirmed that their use does not support clinical decision making around appropriate use of restricted antimicrobial or the review process. Recommendations include evaluating similar digital programmes and a co-design approach.

P035

Improving Antimicrobial Stewardship on the Acute Admission Unit

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Abstract

Introduction:

The acute admission unit (AAU), as the gateway into a hospital, is where many antibiotic treatments commence. Ensuring antimicrobial stewardship on the AAU is therefore critical. This audit cycle demonstrated an improvement in AAU's compliance with the "The Start Smart – Then Focus" initiative¹ through a multi-disciplinary team (MDT) education programme.

Patients and methods:

The records of 280 patients, who presented between 01/08/2022 and 12/08/2022 were retrospectively collated. The Electronic Prescribing and Medicines Administration system was then screened for the presence of a:

- Clinical indication
- End/review date
- Prescribing error in antimicrobial prescription

Both clinical indication and end/review date were expected to be 100% compliant for this audit.

An education programme aimed at the wider MDT (findings presented to AAU junior doctors, consultants and senior staff) then took place. A second round of audit was then performed employing the same methodology as above.

Results:

Education at the MDT resulted in:

- 21% rise in documentation of antibiotic indication (p = 0.0171)
- 6% rise in documented end/review date (p = 0.27)
- 11% rise in prescriptions including both indication and end/review information (p = 0.007)

Conclusion:

Our audit cycle showed a statistically significant increase in compliance with the Start Smart then Focus approach, highlighting the importance of MDT education for antimicrobial stewardship.

References:

1. Antimicrobial stewardship: Start smart - then focus Public Health England 2015 accessed at <https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus> 30/06/2023

P036

Co-prescription of oral fluoroquinolones and tetracyclines with cation-containing medications – an important antimicrobial stewardship target.

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Abstract

Background: Fluoroquinolones and tetracyclines are widely prescribed oral antibiotics that interact with multivalent cation-containing medications (MCMeds). This can significantly reduce antibiotic bioavailability with associated risk of treatment failure and antimicrobial resistance (AMR). We prospectively investigated the prevalence of co-prescribing of MCMeds and oral fluoroquinolones/tetracyclines in inpatients over four weeks.

Methods: Inpatients (excluding critical care, psychiatry, emergency dept) prescribed oral fluoroquinolones/tetracyclines on working days between 19/06/23 to 14/04/23 were identified from pharmacy records. Antibiotic appropriateness as per hospital guidelines, details of co-prescribing with MCMeds and pharmacist documentation of potential interactions on the prescription were recorded.

Results: Of 41/671 inpatients (6.1%) prescribed oral fluoroquinolones/tetracyclines, 13 were prescribed ciprofloxacin, 12 levofloxacin and 16 doxycycline over the study period. The mean daily prevalence of oral fluoroquinolones/tetracyclines was 0.3% (mean 2.15 inpatients, range 0-10 daily). Eighty-five (85.3%) prescriptions were clinically appropriate. MCMeds were co-prescribed in 14/41 (34%) patients, however the interaction was not documented in any prescription. In eight (57 %) prescriptions the medications were administered either simultaneously or within two hours of each other.

Discussion: Oral fluoroquinolones/tetracyclines are not commonly prescribed but when prescribed the majority are compliant with antibiotic guidelines, MCMeds were co-prescribed in a third of patients with antibiotic bioavailability potentially compromised in 57%. Antimicrobial stewardship should include education of prescribers, ward staff and pharmacists regarding potential interactions with MCMeds to prevent AMR and avoidable treatment failure.

P037

A Matter of Time: A Survey to Explore the Perceived Time Released Following a Timely Appropriate Intravenous to Oral Switch

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Abstract

Introduction:

Optimising timely appropriate intravenous to oral switch (TAIVOS) delivers clinical and operational benefits, as intravenous administration is associated with risk and delays to discharge.

One underappreciated issue is the nursing workforce impact due to the increased time required to prepare and administer intravenous compared to oral medicines, at 20 minutes more per dose.

Improving awareness of the workforce benefits of TAIVOS could be an additional driver to improving rates of TAIVOS. Awareness of these benefits amongst medical and nursing staff is not known therefore we aimed to gauge degree of awareness through a survey

Method:

A Microsoft Forms survey was developed by a multidisciplinary working group and distributed to patient facing professionals in acute trusts across the Midlands via QR code, hyperlink, and paper copies.

Respondents were asked to estimate the amount of time that could be saved by switching a patient from a three times daily intravenous antibiotic to an oral equivalent.

Results:

508 responses were received, 489 from nurses and 19 from doctors. The median time considered by nurses to be released following TAIVOS was 30 minutes (IQR 20-30 minutes), whereas doctors perceived this to be 60 minutes (IQR 20-60 minutes). The scenario provided to the respondent would have equated to a time saving of around 60 minutes.

Conclusion:

There is considerable underestimation of the time required to prepare and administer intravenous medicines, particularly with nursing staff. Further work is required to increase awareness of the benefit of TAIVOS for workforce capacity across the Midlands and beyond.

P038

Reducing carbapenem usage: Where should we be looking?

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Abstract

Background: Carbapenem antibiotics remain a last resort for treatment of infections caused by multidrug resistant Gram-negative organisms. The use of carbapenems is increasing and the incidence of carbapenem resistance is rising.

Aim: To understand whether meropenem usage was appropriate and to identify potential targets for intervention to reduce meropenem usage.

Methods: A point prevalence survey of meropenem prescriptions was performed in the Queen Elizabeth Hospital, Birmingham, which is a 1,300-bed tertiary referral hospital treating adult patients. Patients prescribed meropenem on 18/3/2022 were identified from the electronic patient record (EPR) system. The EPR for each patient was reviewed by a consultant clinical microbiologist to ascertain whether there was an appropriate indication for meropenem usage.

Results: 47 patients were prescribed meropenem. More than half of these (55%) comprised 4 specialties (critical care, haemato-oncology, neurosurgery and medicine). In 34/47 (72%) meropenem had been prescribed following consultation with an infection specialist. Of the 13/47 (28%) patients where there was no input from an infection specialist, on review meropenem was deemed appropriate in 12/13 patients. The commonest reasons were clinical deterioration on piptazobactam or antimicrobial guidelines recommending meropenem while awaiting microbiology results. Almost a third of patients 15/47 (32%) were colonised/infected with resistant organisms where meropenem was the 'antibiotic of choice'. In only one patient was the meropenem prescription deemed not appropriate.

Conclusions: Reducing carbapenem usage is multifaceted and antimicrobial stewardship should include focus on other factors which drive antibiotic prescribing including diagnostic stewardship, infection prevention and control and updating antimicrobial guidelines.

P039

Assessment of Intravenous to Oral Switch in Adult Inpatients

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Abstract

Introduction

Guidance for antimicrobial intravenous-to-oral switch (IVOS) guidance was published in February 2023 by UK Health Security Agency (UKHSA). IVOS forms a key part of antimicrobial stewardship and has a range of benefits from reduced risk of bloodstream infections, length of stay and patient mobility. Inappropriate or prolonged antimicrobial is also associated with harms in cost of drugs and equipment, promotion of multi-resistant organisms and adverse effects. These include healthcare-associated infections such as Clostridium difficile infection and catheter-related bacteraemia.

Methods

We aimed to explore concordance with local practice against local antimicrobial and the new UKHSA guidance. We carried out a snapshot retrospective review of electronic case notes and drug prescribing charts of medical and surgical adult inpatients in Lancashire Teaching Hospitals NHS Foundation Trust to assess whether IV antibiotics could have been switched to oral at that point.

Results

A total of 147 patients' data were included in final analysis. Only 22.4% of cases had IVOS performed, despite 81% having no documented infection requiring special consideration and 83% had no contra-indications to using the enteral route. 70.1% of antimicrobial prescribing was in line with local trust guidelines or infection specialist advice and 22.4% of infections had a causative organism found.

Conclusion

Overall, the IVOS in the Trust could be significantly improved as a large proportion of patients on IV therapy may have been suitable for stepdown earlier. Further work will involve education and raising awareness about IVOS and change ethos to 'opting in' rather than 'opting out' of IV antibiotics.

P040

Comparison of in-vitro susceptibility of ceftazidime-avibactam and ceftolozane-tazobactam against carbapenem-resistant *Enterobacteriales* and *Pseudomonas aeruginosa* from a tertiary care hospital in Singapore.

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Abstract

In this study, we compared the in-vitro susceptibility of ceftazidime-avibactam and ceftolozane-tazobactam against carbapenem resistant isolates of *Enterobacteriales* (CRE) and *Pseudomonas aeruginosa* (CR-PAE) and their activity against different carbapenemases.

Methods: Xpert[®]CARBA-R (Cepheid) assay was used to determine the genotype of carbapenem-resistant clinical isolates of *Enterobacteriales* (CRE) and *Pseudomonas aeruginosa* (CR-PAE). Only one isolate per patient was included in this study. Ceftazidime-avibactam susceptibility testing was performed on 31 CRE and 39CRPAE isolates by disc diffusion or microbroth dilution method (Sensititre[™]) whereas ceftolozane-tazobactam susceptibility was done for 44 CRE and 36 CRPAE isolates using ETEST[®] C/T strips or Sensititre. The Clinical and Laboratory Standards Institute (CLSI) breakpoints were used for interpretation of results.

Results: The predominant carbapenemases in our hospital include OXA-48 and NDM-1. 100% of our OXA-48 isolates were susceptible to ceftazidime-avibactam whereas only 34.2% of these isolates were susceptible to ceftolozane-tazobactam. All class B metallo-beta-lactamase (NDM, VIM, IMP) producing isolates were resistant to both antimicrobial agents. Both KPC producers in this study were susceptible to ceftazidime-avibactam and resistant to ceftolozane-tazobactam.

Amongst the genotype negative isolates, both ceftazidime -avibactam and ceftolozane-tazobactam were active in 56% and 52 % isolates respectively. Majority of these genotype negative isolates were *Pseudomonas aeruginosa*.

Conclusions: Both ceftazidime-avibactam and ceftolozane-tazobactam showed comparable activity against genotype negative CRE and CR-PAE, however, ceftazidime-avibactam had better activity against OXA48 CRE isolates in our study. With increase in carbapenem-resistant pathogens globally, epidemiological distribution of CPE in hospitals plays a crucial role in optimization of antimicrobials and effective infection control.

P041

An interactive app for infection specialists to visualise patient data

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Abstract

Effective management of antimicrobials can be supported by better data exploration and communication tools. We have generated an innovative interactive tool to visualise patient data relevant to the clinical team. This web application generates plots with information on the patient's antimicrobial therapy, inflammation markers and microbial cultures. The app was created using features from R coding and the Shiny package, including ggplot2, gg4hx, and egg. We aimed to have a user-friendly interface with a professional and consistent look. To create a chart, the user downloads a sample data file that acts as a template to add patient-anonymised information. Once uploaded using the sidebar panel, the app will generate four plots to allow users to observe treatment patterns and durations, providing actionable insights into the patient's health and treatment outcomes.

1. A Gantt Chart that displays the timeline of antibiotic therapy.
2. A fever chart to monitor the patient's febrile episodes.
3. An inflammatory markers timeline chart to present C-reactive protein (CRP), white cell count (WCC), and creatinine levels.
4. Type of specimen and microorganism detected through microbiological investigations.

Antibiotic stewardship is an essential practice of clinical microbiology and infectious disease teams. With this app, the clinical teams can better monitor antibiotic usage and assess changes in inflammatory markers while guaranteeing patient anonymity. The app is also a practical educational resource to enhance awareness of appropriate antimicrobial prescriptions. This app supports antimicrobial stewardship initiatives by enabling data-driven decision-making and fostering collaboration among healthcare professionals.

P042

Audit of IV antibiotic prescriptions expiring earlier than intended before and after implementation of 3-day default duration

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Abstract

Introduction

Start Smart Then Focus guidance advises that prescriptions for antibiotic treatment should have a stop or review date within 48-72 hours. Furthermore, the recently published Antimicrobial Review Kit (ARK) trial advises antibiotic review within 72 hours. In 2022 we introduced the default duration of 3 days for IV antibiotic prescriptions within our electronic prescribing system for adults. There were concerns regarding antibiotics prescriptions expiring earlier than intended especially over weekends. Therefore, we reviewed antibiotic drop-offs pre and post implementation.

Aim

To compare unintended antibiotic drop-offs before and after 3-day default duration implementation.

Methods

All IV antibiotics prescriptions with a stop date between Friday and Monday over a single weekend were reviewed: before implementation, and after one month and 7 months.

Results

As summarised below, a 90% reduction in unintended drop-offs was observed.

Conclusion

We demonstrated the safe implementation of 3-day default duration to IV antibiotics. Furthermore, the standardised approach has shown a significant and sustained reduction in inadvertent antibiotic drop-offs. This approach appears to be beneficial and supports national guidance and the ARK toolkit.

P043

Carbapenem Reduction Strategy at a District General Hospital in England (UK)

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Abstract

Background

Carbapenem antibiotics should be reserved for specialist use and to manage severe resistant Gram-negative infections, however injudicious use is linked to the selection of multi- and extensively-drug resistant organisms. Since 2016, Kettering General Hospital (KGH) has consistently been one of the biggest users of carbapenems (149.6 Define Daily Doses [DDD]/1000 admissions, SD \pm 22.1) compared to the average use in all England hospitals (mean 1.99 times more) and non-teaching hospitals (mean 2.48 times more). Here we report the results of an ongoing carbapenem reduction strategy.

Methods

The AMS team developed a carbapenem reduction strategy in January 2021. The plan focused on optimising the carbapenem authorisation processes, reviewing sepsis guidelines and implementation, increasing use of antimicrobial guidelines, education and awareness, and continual review of patients on meropenem. Prescribing data (DDD/1000 admissions including day case) were obtained through Rx-Info Define and analysed in Microsoft Excel.

Results

Over 2021-22, mean carbapenem use was reduced by 27.5% (to 108.9 \pm 15.2 DDD/1000 admissions) compared to the pre-pandemic baseline and reduced by 42.9% compared to the 2020-21 mean (190.8 \pm 62.5 DDD/1000 admissions) when pandemic surges inflated antimicrobial prescribing. This reduction was sustained at 92.7 DDD/1000 admissions over 2022-23 with reduced month-on-month variation (SD \pm 13.0).

Most actions completed were low-hanging-fruit within direct scope of the AMS team. Further reductions need to be delivered through engaging senior clinicians and managers across the organisation, improving carbapenem prescribing reports to clinicians, removing carbapenems from all guidelines, and improving AMS education to all staff groups.

P044

EPIC Stewardship: Pharmacist feedback on a novel antimicrobial monitoring tool within an electronic patient record (EPR) system

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Abstract

Background

Clinical pharmacists play a vital role in antimicrobial stewardship and reviewing antimicrobial prescribing. Gathering the information required to undertake an effective review can be time consuming. To improve this process a pharmacist Antimicrobial Monitoring Timeline was developed during implementation of the Epic electronic patient record (EPR) system at Manchester University NHS Foundation Trust (MFT). This consists of a combined single page view of a patients' infection markers, microbiology results, antimicrobial orders and drug levels over time. A survey was conducted 10 months after implementation, with the purpose of gathering feedback on the novel Timeline function.

Method

A brief survey, created and analysed using Microsoft Forms, was distributed to all pharmacists. Respondents were asked to rate the likelihood of using the timeline, their perceived impact on efficiency and efficacy using a Likert scale and complete optional free text comments.

Results

From a total of 44 responses, 34 pharmacists were aware of the Timeline. Most respondents (28/34) reported they would be likely to use it when reviewing a patient with an infection. Most pharmacists responded positively when asked about the impact on efficiency (26/34) and efficacy (27/34). Positive themes identified from additional comments focused on the ease of visualisation of previous therapy and correlation of drug levels and doses.

Conclusion

The Timeline function has been well received by pharmacists and felt to have improved efficiency and efficacy of patient reviews. Further work to increase awareness, utilisation and quantify the benefits is planned.

P045

Antimicrobial prescribing in acute pancreatitis - too much for too many.

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Abstract

Background: Antimicrobials are recommended in acute pancreatitis (AP) only where infection is strongly suspected or positive microbiological cultures are obtained. We conducted a retrospective review of patients with AP (1st January - 31st December 2021) to determine compliance with these recommendations.

Methods: The 2012 Revised Atlanta Criteria for AP was applied to a line-list of discharged patients coded as 'pancreatitis' on the Hospital Inpatient Enquiry System after review of medical, laboratory and radiology records. Data included demographics, length-of-stay (LOS), antimicrobial therapy, positive microbiology and other laboratory results.

Results: Ninety eight patients, 52% (n=51) male; median age of 53 years (range: 18 – 88), with an average LOS of 10.6 days (range: 2 – 101). Thirteen patients had radiological evidence of pancreatic collections, 11 had pancreatic necrosis. Four patients (4%) required critical care admission. Forty-five patients had blood cultures taken, of which three were (6.6%) culture-positive. Pancreatic fluid was cultured from just two patients (2%); one culture-positive. Multi-drug resistant organisms were not isolated. Procalcitonin (PCT) was performed in one case, with a value of 5.3ng/ml (reference range 0-0.49). Antimicrobials were prescribed for 55 (56%) patients; most commonly beta-lactams (n=44) or carbapenems (n=12), with a mean duration 13.21 days (range: 1 – 55). There were no AP-associated deaths. One patient developed *Clostridioides difficile* infection.

Discussion: We identified suboptimal antimicrobial prescribing in AP and a deficit in clinical diagnostic samples to facilitate antimicrobial stewardship in this complex patient cohort. PCT has been identified as a key test to optimise antimicrobial prescribing.

P046

STEWARDSHIP POTENTIAL – THE HIDDEN BURDEN OF ANTIBIOTIC PROPHYLAXIS IN PRIMARY CARE

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Abstract

This study aimed to decrease unnecessary long-term antimicrobial use in primary care by identifying and highlighting patients with long-term or repeated exposure to antibiotics to GP teams for review. The broad spectrum antimicrobial co-amoxiclav was targeted following data showing rising Daily Defined Doses (DDD) per prescription in our Health Board.

Method

- Antibiotic prescribing in NHS Lothian (126 GP practices) was analysed in a 6-month period
- The national Prescribing Information System (PIS) was searched using Daily Defined Doses (DDD) to identify patients
- Long courses of co-amoxiclav were defined as ≥ 63 DDD
- Patients were identified with high antimicrobial usage
- A data collection form was sent to the Primary Care Pharmacy teams to voluntarily collate data

Results

Forty-four patients (47%) were aged 65 or over, putting them at high risk of *C. difficile*.

Forty-one patients had multiple courses of co-amoxiclav and 39 patients were prescribed co-amoxiclav as prophylaxis; of these 59% were for UTI.

Outcomes

This review of long-term co-amoxiclav “shone-a-light” on patients in general practice prescribed co-amoxiclav for extended periods of time. Many patients were no longer under care of the Specialists that initiated treatment. The PIS search identified 240 patients in the full-year prior to the review. The following year patient numbers reduced to 73 individual patients (a reduction of 70%)

UTI prophylaxis was the majority patient group in this study and interventions to review and reduce long term UTI prophylaxis in our Board using this method is underway.

P047

Don't be unAWaRe – Supply of selected 'watch' antibiotic pre-packs in Midlands hospitals.

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Abstract

The UK 5-year national action plan on antimicrobial resistance aims to reduce broad spectrum (WHO Watch and Reserve categories) antimicrobial use in English hospitals by 10% by March 2024. Pre-packs are products prepared with template labels to allow legal supply directly from clinical areas – bypassing pharmacy. Pre-packs are typically used to expedite discharge out of hours and on high turnover wards. However, this often circumvents pharmacists' medicines and AMS checks – and the contribution of pre-packs to overall antimicrobial supply is poorly explored. We aimed to quantify consumption of the three most common 'watch' antibiotic pre-packs at Midlands NHS hospitals.

Midland antimicrobial pharmacists representing 23 Trusts were invited to contribute. Twelve Trusts provided consumption data for oral formulations of co-amoxiclav, clarithromycin and ciprofloxacin in defined daily doses (DDD) for the period 01/12/2022 to 31/05/2023. Data were collated and analysed in Microsoft Excel.

Prepack use from participating Trusts accounted for 198521 of 738492 DDDs (26.9%) for co-amoxiclav, 21118 of 256298 DDDs (8.2%) for clarithromycin and 23479 of 184064 (12.8%) for ciprofloxacin. Trust median proportions were similar at 25%, 6.6% and 11% respectively but with considerable variation (respective IQRs 15.5-32.6, 5.6-9.5, 6.2-16.5).

High variation likely reflects operational differences between organisations. Interventions into pre-pack use may support hospitals meeting the 10% reduction in broad-spectrum antibiotics. Research is needed to fully understand whether prepacks are used appropriately in terms of choice, and whether they contribute to extended durations of therapy.

P048

Retrospective observational cohort study of off-label Dalbavancin use compared to standard of care treatment with out-patient parenteral antimicrobial therapy (OPAT).

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Abstract

Background: Dalbavancin is a second-generation lipoglycopeptide antibiotic with activity against Gram-positive organisms including MRSA. Dalbavancin is Food and Drug Administration and European Medicine agency approved for acute bacterial skin and soft tissue infections. With its unique pharmacokinetic and pharmacodynamic properties, dalbavancin has shown promise for off-label clinical utility, reduced hospital length of stay (LOS) and healthcare cost savings.

Objectives: To assess the efficacy and safety of dalbavancin compared with standard-of-care (SOC) in off label indications, evaluate the cost avoidance, and determine the impact on inpatient LOS in an acute hospital Trust in the UK.

Methods: Adult cohorts receiving dalbavancin or SOC via OPAT were retrospectively studied. Indications included osteoarticular infection, infective endocarditis, Staphylococcus aureus bacteraemia. Primary endpoint was 30-day infection-related readmission (IRR). Secondary outcomes included frequency of adverse drug events (ADE), 90 day follow up, and 30 day and 1-year all-cause mortality.

Outcomes: 154 patients were included: 77 receiving dalbavancin, and 77 receiving SOC. IRR for the dalbavancin group was 73 (95%), versus 68 (88%) in the SOC group ($P=0.1473$). The most common infection diagnoses were bone and joint infection in both the dalbavancin and SOC groups (69% versus 70%). Treatment-related ADE incidence was 3% and 8% in the dalbavancin and SOC groups, respectively ($P=0.013$). Projected cost avoidance overall was estimated to be £449,952.

Significance: In this real-life study, dalbavancin was non-inferior to the SOC. The results show that the success rate was high (95%), tolerability and safety were excellent in the acute hospital setting.

P049

Don't be unAWaRe – issues of selected 'watch' antibiotics on FP10 prescriptions from Midlands hospitals.

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Abstract

The World Health Organization emphasises key antibiotics to safeguard through its 'AWaRe' classifications. NHS England has adapted these and requires a 10% reduction in use of 'watch' and 'reserve' agents in English hospitals by March 2024. Antibiotics may be prescribed in hospital using FP10 (green) prescriptions for convenient community dispensing. However, this bypasses review by hospital pharmacists who typically benefit from better access to relevant clinical information and prescribers than community colleagues.

The extent to which this happens is unclear, so this project aimed to quantify FP10 issues for the three most common oral 'watch' antibiotics at all Midland NHS hospitals.

Consumption data in defined daily doses (DDD) for co-amoxiclav, clarithromycin and ciprofloxacin for the period 01/12/2022 to 31/05/2023 was available on Rx-Info's 'Define' platform. Permission to use this was sought from Midlands antimicrobial pharmacists representing 23 Trusts. Eleven consented and data was extracted for analysis in Microsoft Excel.

FP10 issues from eleven participating Trusts accounted for 33548 of 674969 DDDs (5%) for co-amoxiclav, 21924 of 224937 DDDs (9.7%) for clarithromycin and 8862 of 157000 DDDs (5.6%) or ciprofloxacin. Trust median proportions deviated slightly at 1.9%, 5.2% and 3% respectively with considerable variation evident (respective IQRs 1.5-11, 3.2-13.7, 1.1-13).

Regionally, FP10s represent a substantial portion of the total oral consumption of these agents. High variation likely reflects operational differences in medication supply mechanisms. As FP10s bypass many

secondary-care antimicrobial stewardship approaches optimisation could be significant in delivery of NHS standard contract obligations and in slowing development of antimicrobial resistance.

P050

Direct Penicillin Oral Challenge: experiences of non-allergists from clinic to wards

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Abstract

There is increasing interest in the non-allergists role in identifying and removing penicillin allergy labels (de-labelling) to optimise patient antibiotic treatment and improve antimicrobial stewardship. Our organisation has offered an outpatient allergy testing service run by non-allergists, for adults for almost seven years and we introduced a non-allergist led direct oral penicillin challenge (DOPC) service in 2021 to test inpatients, with the aim of using the existing resources. We report on the evolution of the service in a healthcare organisation with no specialist allergy service prior to the publication of guidelines or studies within the UK.

Overall, 91% (107/117) of patients who completed skin testing and/or direct oral penicillin challenge in both settings had their penicillin allergy labels removed within the defined testing period. The remaining patients who tested positive did not suffer any significant reactions and all reactions resolved within 24 hours.

Of the 36 individuals tested as an inpatient, 53% (19/36) were on treatment for a current bacterial infection and all were switched to a penicillin following testing. Of these 19, 53% (10/19) were switched from intravenous to oral therapy saving 245 days of intravenous therapy (range 3-45 days, average of 27 days).

Our results show that an organisation can introduce a penicillin allergy testing service delivered by non-allergists as a safe and effective way of immediately optimising patient antibiotic treatment and carrying out significant antimicrobial stewardship activity even with limited resources.

P051

A clinical audit assessing compliance of the gentamicin once daily regimen dosing in absence of decision support tool with Trust antimicrobial guidelines at Queen Elizabeth Hospital, University Hospitals Birmingham (UHB).

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Abstract

Background:

Gentamicin is a broad-spectrum aminoglycoside antibiotic with a narrow therapeutic index; therefore, correct dosing is essential to reduce the risk of ototoxicity and nephrotoxicity.

In May 2023, the decision support tool turned off for redevelopment reasons, and therefore, clinicians had to use manual calculator to obtain the dose; therefore, an audit was carried out to assess compliance with guidelines in this period.

Trust's gentamicin guidelines:

C.G.GFR > 40mL/min: 5mg/kg OD

C.G.GFR 20-40mL/min: 3mg/kg OD

If BMI \geq 30kg/m² use ideal body weight

Standard:

100% of prescriptions compliant with UHB Antimicrobial Guidelines

Methods:

The sample included 129 patients who were prescribed the gentamicin once a day regimen between May and June 2023. 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:

15.5% of gentamicin doses were prescribed correctly whereas 84.5% were non-compliant.

The highest level of compliance noted in surgical wards with (n=33, 25%), and poor compliance in neurology wards (n=11, 0%).

The emergency department is the busiest unit in the hospital and managed 18% compared to lesser busy units' haematology had 8% compliance.

Conclusion:

The majority of doses were calculated incorrectly, indicating a low compliance with the trust guidelines. Incorrect dosing can lead to toxicities or sub-therapeutic plasma gentamicin levels, therefore training of calculating gentamicin doses and retrieving the corrected GFR is required for prescribers.

P052

Multicentre perspectives on education and training for non-allergy specialists in spurious penicillin allergy de-labelling

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Abstract

Introduction

The national BSACI guideline provides recommendations for setting up a non-allergy specialists led penicillin allergy de-labelling (PADL) service but does not specify the training standards required.

A team from a multicentre PADL study reflected on the education and training requirements to implement non-allergy specialists led PADL service.

Method and aims:

Review of training received by non-allergy specialists to:

1. Understand the differences in training needs for non-allergy specialists of different professional backgrounds.
2. Outline training standards for national roll out of PADL in UK NHS.

Discussion

The team consisting of nurses and pharmacists reflected on training received which included technical skills, interpretation of clinical history, differential diagnosis and IT systems.

Although there were some similarities, differences were identified in the training undertaken by non-allergy specialists from different professional backgrounds. Pharmacists required training in management of anaphylaxis and basic life support contrary to nurses who had already acquired these skills as part of their nursing career. In addition, pharmacists gained technical skills such as use of nebulisers and observation machines.

Shadowing allergy specialists in clinic demonstrated the application of the PADL tools and the skillset required for distinguishing between true hypersensitivity reactions and spurious allergy.

Background in AMS was perceived as an advantage and as a motivator for patient assessment for PADL especially when communicating the benefit of removing spurious allergy labels.

Conclusion

National standards for training with input from NHS England is needed to create equity amongst non-allergy specialists for delivering a successful PADL service within the UK NHS.

P053

Improving Daptomycin Prescribing in NHS Lothian.

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Abstract

Daptomycin is a reserve antibiotic which is utilised for complex infections involving gram-positive organisms. There is increasing use of this antibiotic locally, however no definitive guideline for dosing, monitoring, and awareness of adverse drug reactions (ADR's). This audit assessed local prescribing practices. The aim of the audit was to improve safety and efficacy of Daptomycin prescribing in NHS Lothian. The objectives focussed upon indications for treatment, dosing, monitoring requirements and prescriber awareness of ADR's. Standards used to compare practice included the Daptomycin label and a recently published SAPG (Scottish Antimicrobial Prescribing Group) Daptomycin prescribing guide. We collected retrospective data on a cohort of patients prescribed Daptomycin within NHS Lothian over a period of 5 months from the 01/07/22 – 01/12/22 (N=16). HEPMA (Hospital Electronic Prescribing) reports were used to identify inpatients within NHS Lothian prescribed Daptomycin. Once patients were identified, TRAK (electronic patient records) and HEPMA were used to obtain data. 38% of patients did not have an up-to-date weight prior to dosing, there was also a large variability in dose (mg/kg) prescribed. Correct dosage for microbial and clinical indication were achieved in only 8 patient episodes. Baseline Creatine Kinase measurements were not performed in 46% of episodes and ongoing monitoring was not met in 25%. As an implementation, the antimicrobial management team have devised a section outlining safe Daptomycin prescribing and monitoring guidance for use on the NHS Lothian Antimicrobial Companion App and a canned text for use on electronic patient record. A re-audit was performed post-implementation.

P054

Audit of Prompt intravenous-to-oral switch (IVOS) of Antibiotics

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Abstract

Introduction

Antimicrobial resistance is a known global concern and threatens the delivery of modern medicine. Intravenous (IV) antibiotics are used to treat serious infections initially, due to 100% bioavailability and faster onset of action, when compared to oral (PO). Appropriate switching of IV antibiotics to oral can bring several benefits though, when clinically indicated.

Aim

Establish whether antibiotic treatments are being appropriately switched from IV to PO (IVOS) within 48 hours, as per local and UK national (CQUIN03) guidance.

Method

A retrospective point-prevalence method was used to collect data from the electronic patient management system (EPIC) during January-February 2023. A CHEQS2 audit tool was then used to create a downloadable report where data, which included patient demographics and clinical parameters were extracted and analysed using MS Excel.

Results and Discussion

Thirty-four prescriptions were analysed for 32 patients.

Compliance rate with the national CQUIN03 was 53.13%. A total of 19% of patients had an antibiotic IVOS plan documented in the notes and 50% of antibiotic prescriptions had an indication which matched the documented diagnosis in the notes.

Co-amoxiclav comprised 32% of total antibiotics and 53% of antibiotic prescriptions that were eligible for IVOS switch. CAP (CAP) accounted for 29% of all eligible IVPO switch prescriptions and was the main indication suitable for switching.

Conclusion

Whilst this was a small study, it demonstrated compliance with CQUIN03 and identified the need to target usage of broad-spectrum antibiotics, such as co-amoxiclav. Focus on the clinical management of CAP is also warranted.

P055

Creating a Digital Vision for Antimicrobial Stewardship (AMS) in England

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Abstract

Introduction

Digital technologies (DTs) are being increasingly adopted to improve patient care. However, their ability to support AMS activities has not been fully evaluated. Work to understand how DTs are currently deployed to support AMS was undertaken to inform a digital vision for AMS by NHS England.

Methods

Healthcare professionals from multiple disciplines participated in online focus groups (n=44) and responded to a web-based survey (n=491) between December 2022 and February 2023

Results

Greater diversity of electronic prescribing systems was identified in secondary care in contrast to higher use of “bolt-on” decision-support software in primary care. Variation in systems used within integrated care systems was cited as a barrier to implementation of system-wide AMS solutions.

A desire for comprehensive data capture from patient consultations contrasted with demands for an easy-to-use interface which didn't detract from clinician-patient interaction, demonstrating the competing priorities of different healthcare professionals.

Secondary care staff placed priority on using DTs to optimise initial prescribing above facilitating work undertaken directly by the AMS team. While most users had implemented digital AMS solutions, few could objectively demonstrate improvements in practice resulting from this.

Alert fatigue was a common theme with careful consideration of priorities and targeting of information needed to best deploy these tools.

Conclusion

The current suite of software available to support AMS offers different strengths and weaknesses in different settings.

Use of these data will allow NHS England to work towards optimising digital systems to support AMS.

Category: Clinical cases

P056

Necrotizing fasciitis of the left upper extremity due to *Clostridium perfringens* following lumbar spine surgery

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Abstract

A 63-year-old woman underwent L5-S1 laminectomy, medial facetectomy, and foraminotomy for excision of paracentral disc herniation with neurosurgery. Two weeks post-surgery she noted drainage of yellow fluid from the incision. She subsequently presented to the emergency department with concerns about the reopening of her midline lumbar surgical incision as well as exquisite pain in her upper left arm and diffuse myalgias. She had tenderness to light palpation or with any motion of her left arm and shoulder. Her surgical site was open, erythematous, with purulent drainage. Her left arm was tender and swollen. Lab work showed leukocytosis of $35.0 \times 10^3/\mu\text{L}$ with 2% bands and lactate 1.7 mmol/L. Hemoglobin and hematocrit were low at 10.9 g/dL and 34% respectively. Ultrasound of the upper extremity did not show any thrombus and she started developing purplish discoloration and blistering of the skin. Computed tomography scan showed extensive subcutaneous emphysema in the affected area. She was seen by surgery and underwent operative incision, drainage, and debridement for necrotizing fasciitis of the left upper extremity. Foul-smelling brown/black/gray fluid drained from the excision of dead tissue. The dissection was extensive, with debridement extending posteriorly down to the previous lumbar site, 60 cm long. Fluid from the deep muscles grew *Clostridium perfringens* in 3 separately obtained cultures. Blood cultures grew *Clostridium perfringens* in 2 sets. Within hours of debridement, she was noted to be pulseless with ventricular fibrillation/ventricular tachycardia. Despite resuscitative efforts, she deteriorated to pulseless electrical activity and passed away.

P057

An atypical presentation of Disseminated Gonococcal Infection

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Abstract

Introduction

Gonorrhoea is a common sexually transmitted infection (STI) however disseminated gonococcal infection (DGI) occurs in < 3% of untreated gonorrhoea cases¹.

Clinical Case

A 67-year-old man presented with a painful, swollen subcutaneous abscess around the proximal interphalangeal joint of his right digitus medius. The patient thought the injury was from a rose thorn prick. The patient has a non-severe penicillin allergy and T2DM. He had 9 days of oral clarithromycin with no improvement. An X-ray showed no bony injury. He underwent incision, drainage, debridement, and washout of the abscess on three occasions. Subsequently, antimicrobials were switched to oral clindamycin. The intraoperative swab isolated *Neisseria gonorrhoea*.

Consequently, the patient was referred to the local Genitourinary medicine clinic and was screened for other STI and blood borne viruses (including HIV). A first-catch urine NAAT was positive for gonorrhoea. Sexual history taking identified no sexual contact with his wife for 25 years and two uncontactable male sexual partners (oral sex only) from a sex on premises venue in the previous six months. A 4-week course of IM ceftriaxone 1g OD was commenced. On completion of appropriate antibiotic treatment for gonorrhoea all signs of infection had resolved.

Conclusion

This uncommon case of DGI shows the value of identification of the underlying infectious agent. This patient benefited from onwards referral to sexual health services where further interventions could be offered including vaccines and discussion of HIV pre-exposure prophylaxis.

P058

Isolated multifocal skeletal tuberculosis: a bolt from the blue

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Abstract

Introduction

Diagnosing isolated multifocal skeletal tuberculosis is challenging based on clinical and radiological findings. The lack of respiratory symptoms and the similarity of the FDG-PET or MRI findings to other lesions can pose a diagnostic dilemma.

Case

A 51-year-old gentleman was referred complaining of a two-month history of lower back pain associated with a weight loss of 4 kg. There was no significant past medical history of note or trauma. Examination revealed spinal tenderness in the mid-lower back, and no neurological deficits. Laboratory tests were within normal limits except for a CRP of 120 mg/L. FDG-PET and MRI of the spine showed multiple osteolytic bony lesions in the cervical, thoracic, and lumbar vertebral bodies and pedicles, highly suggestive of metastasis (Figure 1A). A CT-guided biopsy of the sternum lesion revealed necrotizing granulomas and no evidence of neoplasia. However, GeneXpert MTB/RIF was positive, and subsequently, a fully sensitive MTB was isolated. He was started on standard 12-month TB therapy with complete metabolic resolution of the previously seen multiple bony uptakes (Figure 1B).

Discussion

Extra-pulmonary TB can affect all sites in the body; hence, isolated multifocal skeletal tuberculosis is not exceptional. The MRI or FDG-PET occurrence of multiple and non-contiguous involvements is rare in tuberculous spondylitis, particularly when accompanied by absent pulmonary involvement. Furthermore, tuberculous lesions exhibit increased glucose metabolism and, thus, intense FDG uptake. Therefore, they can easily elude assessment as malignant lesions.

A high degree of suspicion is needed, and the optimal suggested treatment duration is 12-18 months.

P059

I could smell there was something wrong with him: historical case of a decade of chronic undiagnosed brucellosis

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Abstract

Introduction

Brucellosis is a zoonotic infection, with transmission via unpasteurised dairy, or contact with infected animals. It is typically associated with specific occupations, and travel to endemic countries. Diagnosis requires clinical suspicion, and hence delayed diagnosis has been reported.

Case description

A 43-year-old previously fit and well sportsman, presented to primary care with a short history of flu-like symptoms and large joint arthralgia following a family holiday to France.

Although acute symptoms resolved, over the next decade the patient suffered recurrences, which flared every few months. Symptoms included fever, depression, joint pain and malodorous perspiration. Approximately one year into the infection, secondary care specialists diagnosed 'poly-osteoarthritis', and prescribed steroids.

This treatment was ineffective, and over the next nine years, the patient had further symptomatic episodes, and deteriorated markedly. Imaging of his joints demonstrated severe degenerative changes, and the patient was scheduled for joint replacement surgery.

Joint and tissue samples were collected to 'rule out' an infective cause prior to the first joint replacement. *Brucella melitensis* was cultured and serologically confirmed. The patient commenced treatment and made a full recovery.

Discussion

This case highlights several important learning points. Although the patient had compatible clinical features, and relevant travel history, this pathogen (or any infective cause) was never considered. Furthermore, steroids were given which may have exacerbated the infection.

We emphasise the importance of considering brucellosis in patients with compatible travel history, especially those who present with osteoarticular symptoms and chronic inflammation, and for whom all conventional microbiology tests have been negative.

P060

A case of Loiasis in West Yorkshire: the role of COPAT (Complex Outpatient Antimicrobial Therapy) Service

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Abstract

Background

Loiasis is a filarial infection endemic to west and central Africa. In the UK, immigrants from endemic areas are at greatest risk and are usually managed at the London Hospital for Tropical Diseases (HTD). We describe a case of a 41 year old Nigerian female referred to a teaching hospital in West Yorkshire, presenting a clinical and logistical challenge to local clinicians.

Case description

A 41 year old female who recently emigrated from Nigeria, presented to her GP with headache, haemoptysis and fever. Loa loa was seen on thick film with a microfilarial count of 4700 microfilaria/ml. Due to limited local experience in treating Loiasis, she was managed in collaboration with HTD. Given the risk of concomitant onchocerciasis the patient underwent a skin snip test (in HTD) and slit lamp examination (locally), both returning negative results.

The patient was treated with albendazole 200mg BD for the first 4 weeks to reduce the parasite load, followed by 3-weeks of diethylcarbamazine 200mg TDS. Given the risk of complications, clinical and biochemical parameters were monitored closely by the local COPAT team. The parasite load at the end of treatment was undetectable and there were no significant complications.

Conclusions

Loiasis is relatively rare in the UK population and management requires specialist input. Our experience demonstrates that management on a local level is possible with resourceful and efficient collaboration. We hope that this case will help empower teams to manage rare cases locally in order to reduce costs and improve the patient experience.

P061

Severe post-operative infection caused by Non Tuberculous Mycobacteria following elective laparoscopic surgery

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Abstract

Background: Non-tuberculous Mycobacteria (NTM) post-operative infections are more often observed in immunocompromised patients, are frequently associated with use of contaminated implants and surgical equipment, and are a recognized, although not frequent complication in low resource healthcare countries.

We present a rare case of severe and disseminated intra-abdominal NTM infection diagnosed in the UK, caused by *Mycobacterium abscessus*, after elective laparoscopic surgery performed abroad, in a previously healthy patient.

A 44-year-old patient was admitted to our hospital complaining of left sided abdominal pain, high temperature, and pus from the surgical port sites. He had undergone an elective laparoscopic left renal cyst aspiration, five weeks prior in India. CT abdomen showed perforated descending colon, and disseminated intrabdominal and left abdominal wall infection. The patient was deemed for conservative management and antibiotic treatment by the surgeons. A full septic screen showed no bacterial growth from repeated blood and pus cultures. Despite many weeks of broad-spectrum antibiotics, the patient had only partial clinical and radiological response, and therefore mycobacterial cultures were requested upon suspicion of an atypical causative agent. These yielded *M. abscessus*. The patient was referred to an expert respiratory physician, and commenced on amikacin, azithromycin, imipenem, and tigecycline.

Conclusion: Post-operative NTM infections cause significant morbidity and healthcare burden. They are rare in the UK, therefore a high index of suspicion is required when a post-op infection is acquired in regions with higher incidence and previous outbreaks. The management of these infections poses significant challenges for the length of treatment and drug toxicity.

P062

Cryptococcal meningitis leading to a diagnosis of probable systemic sarcoidosis.

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Abstract

A 46-year-old man with a background of cutaneous sarcoidosis on topical treatments only, presented with one week of gradually worsening frontal headache, vomiting and syncope. He was hypertensive but had no neck stiffness, photophobia or focal neurology. His skin showed a discoid rash (pictured). Bloods showed chronic lymphopenia and CSF was lymphocytic, with a positive india ink stain; cryptococcal meningitis was diagnosed and antifungal treatment was started. Blood cryptococcal antigen was positive and CSF culture grew *Cryptococcus neoformans*. HIV testing was negative. He subsequently developed severe headache, altered mental-status and a seventh nerve palsy, and lumbar puncture confirmed CSF pressure was raised (60cmH₂O). Two lumbar intra-dural drains and two extra-ventricular drains were sited sequentially due to refractory intracranial hypertension. After treatment of bacterial drain infections, a permanent VP shunt was placed.

Further investigations showed CD4+ T cells were low (131 x10⁶/L). Serum ACE, Anti-PR3 and Anti-MPO were within normal limits. There were no oligoclonal bands in serum or CSF. CSF cytology found no malignant cells. MRI brain showed multifocal white matter changes consistent with meningitis. A CT showed widespread lymphadenopathy; lymph node histology found noncaseating epithelioid granulomas consistent with systemic sarcoidosis. He is now on cryptococcus maintenance therapy with oral fluconazole and has made clinical improvement.

This is an unusual case of cryptococcal meningitis in an HIV negative patient. It illustrates the importance of maintaining a high index of suspicion for *Cryptococcus*, and of considering sarcoidosis in the potential causes of cryptococcal meningitis in an HIV negative patient.

P063

Confirmed schistosomiasis, possible tropical splenomegaly, and many unanswered questions: when a single diagnosis will not do.

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Abstract

A 28-year gentleman of Eritrean ethnicity presented with recurrent nose bleeds. He reported a 5-month history of fevers with night sweats, weight loss and abdominal distension. He also had localised pain in the left testicle with intermittent dysuria. On examination he was febrile, had bilateral cervical lymphadenopathy, massive splenomegaly, and scrotal tenderness.

Blood results showed severe pancytopenia, new kidney injury (eGFR 8) and raised alkaline phosphatase. Imaging revealed bilateral pulmonary nodules, massive splenomegaly and left sided portal hypertension with cirrhosis and oesophageal varices. Broad infection differentials were considered, and relevant investigations requested. Leishmaniasis was considered in keeping with clinical presentation and a low positive direct agglutination test. However, leishmania PCR and bone marrow for amastigotes were both negative. Sputum and bone marrow cultures have not shown any evidence of active tuberculosis infection. Malaria antigens and films were negative, but malaria serology was positive on indirect fluorescent antibody testing. Subsequently, schistosomiasis serology tested strongly positive (level 9).

He has received three days of praziquantel for schistosomiasis. Given the possibility tropical splenomegaly he will be treated with a three-day course of artemether/lumefantrine. He is being managed by a multidisciplinary team for ongoing pancytopenia on a background of cirrhosis, hypersplenism, and non-recovering acute kidney injury requiring renal replacement therapy. He is currently not fit for liver or renal biopsies, or splenectomy. Outstanding questions are the cause of liver cirrhosis (atypical in schistosomiasis), pancytopenia (unlikely to be solely caused by splenomegaly) and possible schistosomiasis-induced nephritis (unfit for biopsy).

P064

Case Report of Late Latent Syphilis presenting to a Maxillofacial Surgery Department

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Abstract

Syphilis is a sexually transmitted infection caused by *Treponema Pallidum*. The rates of infectious syphilis in the United Kingdom have increased significantly since 2019, with sexually transmitted infections presenting commonly in those aged 15 to 24 years. The chancre is the characteristic feature of primary syphilis, and the oral cavity is the most common presenting extra-genital site. However only a limited number of patients are diagnosed at a primary stage. Manifestations of secondary syphilis include multiple lesions that can affect multiple areas of the body and cause systemic upset. Oral lesions of secondary stage can mimic other conditions which can lead to misdiagnosis and progression onto tertiary syphilis risking fatality.

We describe a case of a 25-year-old male diagnosed with late latent syphilis following a referral to a Maxillofacial Surgery Unit. The patient presented with a long-standing history of an ulcer to the lower lip, tonsillar arch, raised papillary grey lesions on the palate, lymphadenopathy and malaise. Syphilis serology confirmed a long-standing *Treponema Pallidum* infection, however concurrent histological investigations were initially negative with Warthin-Starry Stain. Treatment with Doxycycline was initiated with successful outcome.

Early diagnosis and treatment are key in cases of syphilis infection and when suspected appropriate investigations and referral is necessary. Testing for serum antibodies is the standard investigation to confirm diagnosis. When a biopsy has been undertaken, immunohistochemistry is superior to silver impregnation. Syphilis should be considered as a potential diagnosis of ulceration. An in-depth history, including sexual history, is essential in establishing susceptibility to infection.

P065

Use of delafloxacin in osteomyelitis: a case report

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Abstract

A 94-year-old male with history of prostate cancer, hypertension and heart failure, was admitted to hospital in June 2022 with grade 4 bilateral heel ulcers. Empirical IV co-amoxiclav was started, then escalated to IV piperacillin/tazobactam. MRI scans confirmed osteomyelitis diagnosis and bone samples grew multidrug-resistant (MDR) *Pseudomonas aeruginosa* (piperacillin-tazobactam-resistant and ciprofloxacin-intermediate). IV meropenem was commenced. Off-label use of delafloxacin was discussed within the multidisciplinary team to enable switch to oral administration and decrease hospital stay. MDR *P. aeruginosa* demonstrated delafloxacin susceptibility (MIC 0.125mg/L). Delafloxacin has good bioavailability and no therapeutic drug monitoring requirement. He started 450mg delafloxacin twice daily. Clinical response was monitored for 10 days and he was discharged home to complete 28 days of delafloxacin. Given his age and co-morbidities, no follow-up imaging was planned and district nurses reported ulcer improvement. A telephone consultation in November reported he was well and the ulcer had improved. Readmission and adverse events have not reported to date and the ulcers continue to improve.

Discussion: This case presents the first successful use of delafloxacin in osteomyelitis, with good tolerability and clinical response against MDR *P. aeruginosa*. Delafloxacin enabled discharge 3 weeks earlier than planned, improving quality of life and reducing risk of hospital-acquired infections with associated costs. Delafloxacin also enables early IV to oral switch in support of the antimicrobial stewardship agenda.

Acknowledgements: Menarini Group, manufacturer of delafloxacin, funded writing support for this abstract and project management from Page Medical Ltd. MV received funding from Menarini Group.

P066

A festering poison to the heart

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Abstract

A 50-year old Romanian gentleman presented with fever, myalgia and 30kg weight loss. He was treated for syphilis previously, after acquiring it from his ex-wife 16 years ago. On examination, there was a pansystolic murmur in the axilla, and the patient had an ataxic gait. Blood tests showed raised inflammatory markers. However, standard investigations for infective endocarditis, including multiple blood cultures, serological titres for fastidious organisms and antibody tests were negative.

CT of the chest, abdomen and pelvis demonstrated hepatosplenomegaly with multiple splenic infarcts. MRI of the head with contrast showed multiple punctate enhancement in the bilateral hemispheres with leptomeningeal enhancement. Transthoracic echocardiogram demonstrated large vegetation leading to severe mitral regurgitation. Serum treponemal antibodies were positive; TPPA was positive at 1:1280 and RPR: 1:4 Treponemal IgM was negative; lumbar puncture syphilis serology was negative. The patient was treated with an extensive period of intravenous antibiotics, in addition to a prosthetic metallic valve replacement, where unusual ragged calcified valvular tissue was observed.

Tertiary syphilis is a difficult diagnosis to confirm, since it can often be indolent and occur in areas of the body where they may go unnoticed. In our case, a diagnosis of syphilitic endocarditis was made from a combination of the history, an initial increase in size of the lesion following antibiotic therapy and observation of likely gumma on the mitral valve during surgery. In such cases, surgery in addition to optimal antimicrobial therapy is necessary for effective treatment.

P067

Just keep digging.

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Abstract

A 45-year-old gentleman, with ADHD and depression, presented to the Emergency Department with a 1-week history of headache, fever and myalgia and 3-day history of vomiting. No respiratory symptoms or diarrhoea. He had been camping 10-days previously and recent gardening had resulted in abrasions to his hands. No foreign travel. Significant findings on examination were fever, tachycardia and tender cervical lymphadenopathy. Initial investigations demonstrated lymphopenia, thrombocytopenia, acute kidney injury, mild derangement of liver function tests and CRP 180 mg/L. HIV test negative. Upper lobe reticular shadowing was reported on chest x-ray but no consolidation. Ceftriaxone and Acyclovir were commenced empirically for meningoencephalitis.

Hours later he deteriorated with sepsis and was admitted to ITU. Lumbar puncture demonstrated lymphocytic pleocytosis (WCC 62mm³; 90% lymphocytes), normal protein, low glucose, negative microscopy and negative Enterovirus, VZV and HSV PCR. The following day he required intubation for respiratory failure and CT revealed extensive bilateral lung consolidation. Doxycycline was commenced for possible tick-borne infection and Aciclovir stopped. MRI head demonstrated new multiple foci in the left cerebellum consistent with infarcts. On day 5, he was successfully extubated and mobilising. RIPL reported positive *Leptospira* PCR on blood and CSF with positive *Leptospira* IgM. On day 8 Ceftriaxone was stopped. No alternative cause of stroke was identified including normal echocardiogram and CT angiogram.

Aseptic meningitis is common in the immune phase of Leptospirosis but severe neurological manifestations are unusual. On literature review, there are rare reports of ischaemic stroke complicating Leptospirosis and the aetiology not fully understood.

P068

Bite-related bacteraemia – a rare zoonotic infection in the UK

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Abstract

Introduction

Rat bite fever is a systemic zoonotic illness transmitted through contact with infected rats, or with food and water contaminated with infected rat faeces. There are usually 1-2 cases diagnosed per year in the UK.

Case description

A 70-year-old male with history of previous drug misuse and unsanitary living conditions, presented to the Emergency Department with a history of 3 weeks of feeling unwell, confusion, wheezing, fever, generalised body aches. He was delirious and reporting rat bites to his face, which was interpreted as a symptom of his delirium. On admission, WCC was $20.72 \times 10^9/L$, CRP 342mg/L, and chest X-ray showed coarse bronchovascular markings bilaterally.

He was started on oral amoxicillin for community acquired pneumonia. *Streptobacillus moniliformis* was identified in the blood cultures, result which was also confirmed by the Reference Laboratory. The treatment was changed to IV/IM ceftriaxone 2g BD as the patient continued to pull out the IV access, and he completed just over 2 weeks of antibiotics. A Transthoracic Echocardiogram and a full-body CT (computerised tomography) showed no deep seated foci of infection. During admission, the patient had migratory arthralgias on lower limbs and scanty palmar rash. Overall, he made good improvement, although he remained delirious with possible signs of mixed dementia on CT head. Although not on the list, this case was also notified to UKHSA.

Conclusion

An important lesson learned from this case is that the clue to diagnosis might be hidden in the history taken, even when the patient is delirious.

P069

***Salmonella* Typhimurium endovascular infection**

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Abstract

Introduction

Mycotic aneurysm is a rare but serious complication of nontyphi *Salmonella* bacteraemia.

Clinical Case

A 71-year-old man with a known stable 3.5cm abdominal aortic aneurysm(AAA) presented with a 3-day history of severe central abdominal pain. On examination, he had a peritonitic abdomen. Bloods showed White Cells 11x10⁹/L, CRP 456mg/L, lactate 2.3mmol/L.

CT showed inflammatory stranding consistent with contained ruptured mycotic aneurysm.

The patient underwent an emergency open repair of ruptured mycotic aneurysm. Intra-operative findings included inflammation and frank pus. An aortic graft was inserted and patient was given gentamicin, teicoplanin and metronidazole intra-operatively.

Discussion with microbiology highlighted that the patient had an admission 5 months previously with *Salmonella* Typhimurium bacteraemia, for which he received 14 days of antibiotics. No clearance blood culture was available. The initial antibiotics were changed to meropenem.

Intra-operative samples grew *Salmonella* Typhimurium sensitive to cefotaxime/ceftriaxone and azithromycin, therefore therapy was switched to ceftriaxone 2g. The patient was discharged after 11 days and completed 6 weeks of IV ceftriaxone at home, followed by 6 weeks oral azithromycin 1g OD.

Repeat CT at the end of treatment showed no evidence of residual infection; therefore the multidisciplinary-team(MDT) outcome decided against lifelong suppressive treatment. The agreed plan was for close monitoring with monthly inflammatory markers and CT follow-up at 3-months.

Conclusion

This case demonstrates the importance of close monitoring after *Salmonella* bacteraemia especially in a patient with known AAA. Without national guidelines for mycotic aneurysm treatment continues to be dictated by expert opinion and MDT approach.

P070

Vertebral discitis secondary to *Salmonella* Paratyphi in an immunocompromised, pregnant returning traveller

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Abstract

Introduction:

Salmonella species cause a broad spectrum of disease, from asymptomatic carriage to typhoid fever, and bacteraemia. However, vertebral osteomyelitis and discitis are uncommon complications of Salmonella infection.

Case description:

A 39-year-old female returned to the UK on 2/1/23 following travel to Pakistan. She presented on 11/1/23 with fevers, confusion, diarrhoea, and vomiting. She had non-fibrotic hypersensitivity pneumonitis, for which she had been prednisolone for three months. Blood cultures isolated Salmonella Paratyphi A. Stool PCR was positive for Salmonella, Campylobacter, and Giardia. She had a positive urine pregnancy test and raised B-hCG levels, but an incomplete miscarriage was visualised via ultrasound on 14/1/23. She completed 14 days of IV antibiotics.

She re-presented on 14/2/23 with recurrence of fevers, and back pain. Her blood cultures grew the same Salmonella species. She was treated with IV meropenem and PO azithromycin for seven days. An MRI spine on 28/2/23 reported T11/T12 discitis and she was restarted on IV ceftriaxone via OPAT.

After six weeks of IV ceftriaxone, repeat imaging did not demonstrate any interval change. She completed a further six weeks of oral therapy – initially azithromycin, followed by co-trimoxazole due to drug intolerance. Her symptoms resolved and a follow-up MRI spine reported reduced oedema and enhancement.

Discussion points:

Salmonella infections can manifest as rare clinical presentations, especially in immunocompromised patients. Investigations such as MRI spine, transthoracic echocardiograms, and Positron Emission Tomography scans are useful when considering disseminated disease. Although genomic data analysis is available, clinical management remains primarily guided by clinical MIC testing.

P071

To azole or not

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Abstract

A man in his early 30s with type 2 diabetic with an interesting surgical history.

Multiple left and right sided percutaneous nephrolithotomy to remove a staghorn calculus causing an obstruction. Both stents were finally removed

Ideally should have recovered but around 8 months later, he was readmitted with a stone causing hydronephrosis with obstruction and he underwent a left ureteroscopy with stent insertion.

While fixing the stent it was observed that in the kidney there was pus which appeared like thick milk. Again, the stone caused a significant obstruction and a repeat ureteroscopy was done. Kidney became grossly hydronephrotic and there were fungal debris.

Aspergillus fumigatus spp was isolated from the aspirated milk pus, tissue and fungal debris.

He was started on voriconazole and continued for a week, had to be stopped as he developed hepatitis.

We started him on oral Isavuconazole, but given that urinary excretion is only 40 % we needed something else.

We inserted a nephrostomy tube and did a local irrigation with amphotericin b for 24 hours.

Patient improved after that, and all his cultures post that were negative for fungal elements.

P072

Case report of *Stenotrophomonas maltophilia* blood stream infection and lymphadenitis in a paediatric haematology stem cell transplant patient

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Abstract

Stenotrophomonas maltophilia lymphadenitis has been reported in the literature but not commonly encountered in clinical practice.

We present a case of a 14 year old female with severe aplastic anaemia undergoing unrelated donor stem cell transplant, after immunosuppressive conditioning therapy with fludarabine, cyclophosphamide and alemtuzumab. Infection prophylaxis was with aciclovir and posaconazole. She presented early post transplant, before engraftment, with febrile neutropenia, unresponsive to standard institutional first line antibiotics with piperacillin-tazobactam and amikacin. She developed jaw pain with swelling, and imaging confirmed lymphadenitis which was biopsied. *Stenotrophomonas maltophilia* was cultured from the biopsy, and around the same time she also grew *S. maltophilia* from a central vascular catheter (CVC) line culture.

Treatment of this case posed a dilemma as treatment options are limited due to the inherent resistance of this species, particularly to first-line agents such as beta-lactams and aminoglycosides. Co-trimoxazole remains the gold standard treatment for *S. maltophilia* infections, however myelosuppression is a recognized side effect which could have further complicated her bone marrow engraftment. On balance she was started on high dose co-trimoxazole. Source control was achieved when her CVC line was removed and the jaw lesion was drained. In total she received 16 days of high dose co-trimoxazole, and clinical improvement was seen once co-trimoxazole was started. She also started on engraft despite being on co-trimoxazole. Three weeks after her admission she was discharged home with haematology follow up.

P073

An unusual case of *Mycobacterium canetti* (smooth tubercle bacilli) presenting with CNS tuberculoma.

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Abstract

Background: *Mycobacterium canetti* (*M. canetti*) belongs to the Mycobacterium tuberculosis complex. It is typically associated with adenitis and less frequently with pulmonary disease. Cases are almost exclusively from the Horn of Africa suggesting a yet unidentified environmental reservoir for infection.

Case details: We report a rare case of *M. canetti* central nervous system (CNS) infection in an adolescent.

A 16-year-old male presented with seizures whilst flying from Djibouti to the United Kingdom. CT and subsequent MRI brain demonstrated a large multifocal temporal lesion. Initial radiological interpretation was of glioma and so the patient underwent craniotomy and biopsy of the lesion.

Histology demonstrated granulomatous inflammation with no malignant cells, Ziehl-Neelsen stain was negative. Based on histology the patient was started on empiric anti-tuberculous treatment with rifampicin, pyrazinamide, ethambutol & isoniazid. Tissue became culture positive at day 10 and whole genome sequencing identified *M. canetti*. *M. canetti* is considered to have intrinsic resistance to pyrazinamide and treatment was adapted with pyrazinamide changed to levofloxacin. The patient tolerated treatment well and demonstrated radiological improvement. He remains under follow up by the infectious diseases team and seizure free. His HIV serology is negative.

The panD_M117T mutation has been proposed as significant in pyrazinamide resistance in *M. canetti* and this mutation was present in this isolate.

Conclusions. *M. canetti* rarely causes CNS infection, within the existing literature two cases are described in patients with advanced immunosuppression. We believe this to be the first description of CNS infection with this organism in an immunocompetent individual.

P074

Chronic Pacemaker Pocket Infection with *Klebsiella oxytoca*

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Abstract

Infections are a recognised, albeit uncommon, complication of implantable cardiac device insertion, occurring in 2% of cases. The most common pathogen is *Staphylococcus aureus*. Only 9% of such infections are associated with Gram negative bacilli. We outline the case of a 76-year-old woman, presenting with a 12-month history of swelling and discomfort over the site of a dual-chamber pacemaker site. The device had been in situ for over 20 years. On examination, there was a 5 x 6 cm tender, firm swelling with no evidence of skin erosion, subsequently confirmed as an abscess on ultrasonography. Initial bloods showed CRP 88 and WBC 7.5. Blood cultures were negative. Due to a history of a rash to beta-lactams, she was commenced on intravenous daptomycin. Trans-thoracic echocardiography was suggestive of vegetation attached to the right ventricular lead, but this was not seen on trans-oesophageal echocardiogram. Following transfer to a specialist cardiology centre, she underwent pacemaker extraction, and incision and drainage of the abscess. Initial microscopy of the pus demonstrated Gram negative bacilli, thus gentamicin and metronidazole were added to her antibiotic regimen. The isolate was subsequently identified by MALDI-TOF as *Klebsiella oxytoca*. The same organism was isolated from the pacemaker lead tips (> 15 colony-forming units). VITEK confirmed susceptibilities to co-amoxiclav, ceftriaxone, gentamicin, and aztreonam. The patient was subsequently switched to intravenous ceftriaxone monotherapy to complete four weeks of treatment, with good clinical response.

P075

***Weeksella virosa* Peritoneal Dialysis-associated Peritonitis – A Cause for Concern?**

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Abstract

A 32-year female with end-stage renal disease due to autosomal-recessive polycystic kidney disease and failed renal transplant, on peritoneal dialysis (PD) presented with abdominal pain and cloudy PD effluent over the previous 24-hours suggestive of peritonitis. She had history of recurrent UTI, a high BMI and menorrhagia.

She was started on empirical IP Vancomycin and Gentamicin. PD effluent cytology showed neutrophilic (95%) white cell count elevation ($>1000 \times 10^6/L$). 48-hours later cultures grew Gram-negative bacilli, later identified as *Weeksella virosa* (MALDI-TOF MS Bruker™) resistant to aminoglycosides and ciprofloxacin. MIC for meropenem (0.032) and piperacillin-tazobactam (<0.016) were low and susceptibility was presumed based on available literature and CLSI breakpoints for non-Enterobacteriaceae.

Antibiotics were changed to IP Meropenem 500mg in the long-dwell PD bag for three-weeks with full resolution of infection without loss of PD-tube or technique failure. At six-months, the patient remains well.

Weeksella is an uncommon cause of PD-peritonitis but can lead to fatal outcomes. Although the suspicion of peritonitis was timely, empirical antibiotics were ineffective in our patient. The lag in starting meropenem could have allowed her to deteriorate. She was particularly vulnerable as she had ESRD, obesity, immunosuppression and recurrent UTI. Revised ISPD-guidance suggests 3-weeks of treatment IP for Gram negative PD peritonitis. Possibility of *Weeksella* infection should be considered in susceptible patients with Gram-negative PD-peritonitis and carbapenems initiated early if clinical parameters worsen despite empirical antibiotics. There are currently no treatment guidelines for *Weeksella* infections. Antimicrobial resistance to common empirical antibiotics like cephalosporins and aminoglycosides remains challenging.

P076

Case of Ludwig's angina complicated by deep neck abscesses and acute necrotizing mediastinitis.

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Abstract

Ludwig's angina is a rapidly progressive bacterial infection causing flour of the mouth Cellulitis. The source of infection is usually dental. Extension through deep neck spaces causes fatal complications such as airway obstruction.

We present a 40-year-old previously healthy male, who presented to our ER with severe neck and chest pain for 2 days, he was febrile, hypotensive, and distressed. Initially, Acute coronary syndrome was suspected, but ECG and enzymes were normal and Chest-Xray showed wide mediastinum.

Further assessment revealed that his symptoms started with lower tooth pain and jaw swelling that progressed rapidly causing difficulty in swallowing, and the inability to close his mouth or talk clearly. Examination showed poor oral hygiene, tooth carries, and a firm, tens, and tender swelling extending from the jaw to the anterior chest wall.

Then CT scans Confirmed tooth infection, multiple anterior neck abscesses, and mediastinitis. Subsequently, he underwent urgent Incision and drainage of the skin and subcutaneous tissue, infected molar extraction, and was started on Piperacillin–Tazobactam and clindamycin. Blood cultures grew Streptococcus Constellates and fluid culture Streptococcus Anginosus and Pseudomonas aeruginosa.

Despite these measures and changing the antibiotics to cefepime, and metronidazole based on Sensitivity, the fever and bacteremia persisted. He didn't improve until a loculated empyema was discovered later on CT and drained. After that, he improved, and the abscesses regressed on the follow-up images.

Deep head and neck abscesses and Necrotizing Mediastinitis are Often difficult to detect clinically, therefore once suspected urgent imaging and drainage are mandatory.

P077

Far from farcical: A case of *Nocardia farcinica* brain abscess

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Abstract

An 81-year-old presented following a fall, and described a week-long history of being increasingly “off balance”, with left sided upper and lower limb weakness found on examination. Cranial imaging showed a solitary frontal brain abscess. He was HIV negative, and had a background of nephrotic syndrome, secondary to biopsy proven minimal-change disease diagnosed 16 months previously and, after a recent relapse, had been re-started on a weaning course of oral steroids. He underwent image-guided aspiration of the brain abscess following transfer to a tertiary neurosurgical centre. Culture of aspirated pus grew *Nocardia* species identified as *N. farcinica* by Matrix-assisted laser desorption-ionisation time-of-flight spectroscopy. Sensitivity testing was performed by ellipsometer measurement of minimum inhibitory concentrations, interpreted according to Clinical & Laboratory Standards Institute breakpoints. Subsequent pulmonary imaging showed underlying emphysematous changes only, despite the patient stating no smoking history, and the patient had no history or clinical evidence of cutaneous disease. As such, there was no evidence of a primary focus or otherwise disseminated disease on assessment, making this case of solitary, rather than multifocal or multi-loculated abscess, unusual. The patient was managed with antibiotics alone following aspiration of the abscess, being treated with co-trimoxazole and linezolid in combination prior to oral stepdown. Co-trimoxazole dosing was optimised by measurement of serum pre- and post-dose levels. His inflammatory markers remained suppressed throughout and he remained clinically well with mild persisting neurological sequelae of his abscess at the time of repatriation to his local hospital, with further follow-up and monitoring planned.

P078

Legionnaire's Disease – A case series and lessons learned from Teaching Hospital experience

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Abstract

Introduction

Legionella is an intracellular Gram-negative pathogen that can cause infection usually diagnosed through PCR of lower respiratory tract samples and urinary antigen, but the latter only detects *L. pneumophila* serotype 1.

Case description

We would like to present our hospital experience on Legionnaire's disease in the last 12 months.

Case 1

A 59-year-old male presented with 1-day history of fever, diarrhoea, after returning from Morocco. Chest X-ray (CXR) showed left lower zone pneumonia with small pleural effusion.

Case 2

A 65-year-old male known with COPD and diabetes presented with 3-days history of confusion, pyrexia and non-productive cough. CXR showed right basal atelectasis with a pleural effusion.

Case 3

A 61-year-old female recently returned from Spain presented with 1-week history of dyspnoea and fever. CXR showed right middle lobe consolidation.

All three patients had high inflammatory markers with deranged LFTs only for the first two cases. Extended respiratory PCR swabs were positive for *Legionella pneumophila* for the first two cases, while the last two cases had positive Urinary Antigen (UAg).

Legionella pneumophila was confirmed in sputum by the Reference Laboratory in all cases, last two being serogroup 1, and the first one serogroup 7, which explains the only negative UAg result. All cases were notified to UKHSA and had good response to treatment.

Conclusion

Although extended respiratory PCR throat swab is not a routine diagnostic test it allowed us to diagnose Legionella Serogroup 7 infection and implement appropriate antimicrobial therapy with confirmation of our lab diagnosis provided by the Reference Laboratory.

P079

A case of haemophagocytic lymphohistiocytosis secondary to disseminated histoplasmosis in a patient with advanced HIV.

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Abstract

Background:

Patients with advanced HIV can present with multiple life-threatening pathologies. Disseminated histoplasmosis is an underdiagnosed infection in advanced HIV which can lead to haemophagocytic lymphohistiocytosis (HLH).

Clinical case:

A 36-year-old woman originally from Nigeria was admitted with a two-month history of weight loss, fevers, malaise and a papular rash. She was diagnosed with advanced HIV with a CD4 count of 5 cells/mm³ and was pancytopenic. She spiked fevers despite broad-spectrum antimicrobial therapy. Elevated ferritin and triglycerides levels with haemophagocytosis on bone marrow biopsy indicated HLH; she was treated with immunosuppressive therapy. Mycobacterial blood cultures grew *Mycobacterium avium-intracellulare* (MAI). She also had an *Abiotrophia defectiva* bacteraemia, *Staphylococcus epidermidis* line infection and cytomegalovirus viraemia. Despite treatment of her conditions, the patient deteriorated requiring ICU admission. On day 47 of admission, blood cultures grew *Histoplasma capsulatum*. Biopsy of the rash showed fungal elements. She was treated for disseminated histoplasmosis (DH) with antifungals and improved.

Discussion:

Management of patients with advanced HIV who have multiple pathologies and numerous drug therapies relies on effective multi-disciplinary team involvement. Despite early diagnosis of advanced HIV and early consideration for HLH, there was a significant delay in diagnosis of DH, a condition with a high mortality. This delay was due to factors including the initial attribution of pancytopenia and fever to HLH and MAI infection instead of DH, as well as the slow growth of *H. capsulatum* in cultures. Awareness of DH as a cause of HLH in the context of advanced HIV is therefore crucial.

P080

Streptococcus pneumoniae: a rare cause of septic arthritis in an immunocompetent adult.

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Abstract

A 66-year-old female presented with a 10-day history of painful right knee swelling and an inability to walk. She had a background of previously treated right femoral osteomyelitis. She reported no preceding illness or respiratory symptoms. She was pneumococcal vaccine naïve.

Examination revealed a right knee effusion, which was aspirated. The knee aspirate had no bacterial growth but later detected *Streptococcus pneumoniae* DNA on *lytA* PCR. Bloods revealed a white cell count of 14.4 10⁹/L and CRP of 240 mg/L. A set of blood cultures had no growth after 5 days.

The patient underwent an arthroscopic washout of the right knee joint; pus sampled intra-operatively cultured *S.pneumoniae* sensitive to penicillin, clindamycin, teicoplanin and moxifloxacin. MRI of the right femur reported a large knee joint effusion, appearances concerning for a haemorrhagic and infective aetiology, with distal thigh myositis, and no convincing evidence of osteomyelitis. HIV serology and a myeloma screen were negative. The patient was commenced on IV ceftriaxone 2g daily. After 7 days she was clinically well enough to be discharged home; she completed 3 further weeks of ceftriaxone. At 4 months follow-up, she had made an excellent clinical recovery.

The diagnosis of pneumococcal septic arthritis is rare outside the context of an immunosuppressed/non-adult patient, especially in the absence of preceding meningitis or respiratory tract infection. The additional diagnosis of pneumococcal myositis is an even rarer entity. Osteomyelitis may need consideration as a consequence of pneumococcal infection. Patients with disseminated *S.pneumoniae* infection require thorough investigation for underlying immunosuppression.

Category: Clinical microbiology

P081

Genetic profiling of *Cryptosporidium* species and assessment of their transmission pattern

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Abstract

Background:

Cryptosporidium, a protozoan parasite, infects GI tract of vertebrates leads to the diarrheal disease cryptosporidiosis. There are two routes of transmission of this parasite: Anthroponotic and zoonotic. Studies on the transmission route of *Cryptosporidium* are limited from developing countries. In India, there is a lack of transmission status of *Cryptosporidium*. Therefore, we carried out a study using molecular analysis of *Cryptosporidium* from human (fecal sample), vegetable and water samples to understand the transmission pattern of *Cryptosporidium*. Methods: A total of 500 fecal sample from persons suffering from diarrhea attending our referral institute in north India. Along with these we also collected 120, vegetable and 30 water samples from surrounding regions. PCR was performed for three genes 18SrRNA, hsp70, gp60 followed by sanger sequencing and further sub-typed. Results: Of the 500 human samples, 15 samples were found positive for 18SrRNA, hsp70 gene. The majority of *Cryptosporidium* patients were children (n=8, 53.3%). Two samples (each) were found positive in both water and vegetable samples. These samples were further sub-typed and categorized into various subfamilies of *Cryptosporidium hominis* and *C. parvum*, more cases of *C. hominis* (n=11, 73.3%). Conclusion: Subtypes of *Cryptosporidium* sp. discovered in this investigation indicated both anthroponotic and zoonotic transmission. Zoonotic subtypes were also found in drinking water and vegetable samples, implying water and food borne transmission. The findings of this research point to *Cryptosporidium* spp. contamination of water and vegetables, implying a possible risk to the health of humans. However, more sampling is required to determine the precise degree of the *Cryptosporidium* zoonotic transmission..

P082

Characteristics of the *Mycoplasma pneumoniae* epidemic from 2019 to 2020 in Korea: Macrolide Resistance and Co-Infection Trends

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Abstract

Mycoplasma pneumoniae is a significant etiological agent of community-acquired pneumonia. It exhibits distinct cyclic epidemic patterns recurring every three to five years. Several cases of co-infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been reported globally, showing unfavorable clinical features. Comprehensive understanding of the characteristics of recent outbreaks and close monitoring to predict future epidemics is essential during SARS-CoV-2 pandemics.

The epidemiological features of the recent outbreak (May, 2019~April, 2020) of *M. pneumoniae* pneumonia (MPP) were investigated using retrospective data of the last five years. Molecular test data for macrolide resistance and co-infection were obtained from the Seegene Medical Foundation, Korea. Open data system of the Health Insurance Review and Assessment Service of Korea was used for national medical expenditure and hospitalization rates analysis.

M. pneumoniae was the most identified non-normal floral respiratory bacterial pathogen at 5.66%. Individuals aged under 15 years accounted for 93.18%. Macrolide resistance rate was 69.67%. During the epidemic period, the macrolide resistance rate increased significantly, peaking at 71.30%, considerably higher than 60.89% during non-epidemic periods. Co-infection rate with other respiratory pathogens was 88.49%. The macrolide resistant *M. pneumoniae* showed higher co-infection rate than the susceptible. The epidemic period showed higher hospitalization rate (44.27% vs 28.84%) and 78.27% higher medical budget expenditure per patient compared to non-epidemic periods.

The higher macrolide resistance rate of epidemic and higher co-infection rate of MRMP highlight the need for monitoring future MPP outbreaks especially considering macrolide resistance and the increased risk posed by co-infection with other pathogens.

P083

Group A Streptococcal Bloodstream Infections: An Unexpected Pattern

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Abstract

GAS is responsible for various invasive infections but predominantly concerning infections associated with high morbidity and mortality remains cellulitis and necrotising fasciitis. Patients with comorbidities such as diabetes mellitus or those that are intravenous drug users are at higher risk of developing complications. We conducted this study to analyse outcomes in patients with GAS BSI. Data were collected from pathology and hospital database.

This single centre retrospective study identified 34 patients admitted with GAS BSI to University Hospital in 2022. We observed most patients presenting with BSI were in their 70s (41.18%).

The most common source of infection remained skin and soft tissue infections, with cellulitis (47.06%) being the most common. We only observed necrotising fasciitis in 2 patients (5.8%). 47.06% of patients in the cohort had a comorbidity that put them at higher risk of having GAS BSI. Seventy percent (70.58%) of patients received intravenous benzylpenicillin as the mainstay appropriate antibiotic treatment. We observed 11.76% of GAS isolates were resistant to clindamycin. Interestingly, we noticed very low mortality (3%) with only one patient who was deceased in that infective period.

We conclude that GAS BSI remains predominant in the elderly population with surprisingly lower mortality and less complication of necrotising fasciitis, which is contrasting to its counterpart where patients present with necrotising fasciitis and no GAS BSI. As a result, we observed a lower rate of surgical intervention in this group and no amputations were noted which is an interesting and unexpected finding.

P084

An insight into the epidemiology of Haemophilus influenzae blood stream infections (BSI) at University Hospital of North Midlands.

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Abstract

Since the introduction of the Haemophilus influenzae (H. influenzae) serotype b vaccine in 1992, infections with those strains have rapidly declined in the vaccinated population. But there are other H. influenzae strains which remained an ongoing cause of infection in vulnerable populations. This study assesses the epidemiology, typing result and association of relevant co-morbidities in patients with H.influenzae BSI and impact of vaccination.

This single centre retrospective observational study investigates patients with H. influenzae BSI at University Hospital from January to December 2022. All data was collected using pathology and hospital database.

13 patients were identified with H influenzae BSI. The average age of patients was 72.77 years old. 61% of patients had an underlying associated respiratory co-morbidity, with 38% patients having COPD being the predominant disease. We observed 61.5% of H influenza strains were non-encapsulated which was an interesting finding. Out of the encapsulated H influenza strains, serotype E was the most prevalent. There were no infections with H influenza b strains. We noted overall low all-cause mortality (30%) which was reassuring. We observed no invasive disease with non-encapsulated strains.

We conclude that there has been a confirmed shift of infections with non-encapsulated H. influenza strains predominantly in elderly population, who were likely not vaccinated. There is possible association with underlying respiratory diseases which predisposes for higher colonisation rates in this cohort of patients. We observed overall low mortality.

P085

Developing polymicrobial wound biofilm models through microbiome analysis

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Abstract

Biofilm wound infections are commonly polymicrobial in nature, making them difficult to treat and often evolving into chronic or non-healing wounds. The role of the microbiome in wound healing is becoming increasingly more evident, as it has been shown to be a deciding factor between healing and non-healing wounds. Hence, considering the microbiome when developing *in vitro* models is crucial. In this work, we aim to develop defined polymicrobial biofilm models using the wound microbiome as a reference point. Species and strains have been selected based on a literature review of wound microbiome data and NanoPore sequencing data from patient samples [Diabetic Foot Ulcers (DFUs)] collected at the Lancaster Royal Infirmary. Three different defined models will be tested: **Gram-positive pathogen model** (*Staphylococcus aureus*, *Candida albicans*, *Corynebacterium striatum*, *Fingoldia magna* and *Pseudomonas aeruginosa*), **Gram-positive commensal model** (*Staphylococcus epidermidis*, *Malassezia furfur*, *C. striatum*, *F. magna* and *P. aeruginosa*) and **Gram-negative pathogen model** (*Escherichia coli*, *M. furfur*, *C. striatum*, *F. magna* and *P. aeruginosa*). qPCR analysis using specific primers will be used to quantify the abundance of each species in the defined models following biofilm growth. In the future, these models can serve as a tool to test the efficacy of antimicrobial therapies on complex wound biofilm communities.

P086

Review of the Microbiology Online Logging E-System (MOLES): performance and acceptability for users

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Abstract

Microbiology Online Logging E-System (MOLES) is a bespoke electronic management system for handling microbiology-related enquiries at Lancashire Teaching Hospitals. It can be used remotely and covers multiple hospital sites within the Trust. It allows clinical users to request a call back for infection management advice. Calls are classified as immediate, urgent, or standard. The microbiology team can then prioritise the call backs by urgency and the time taken to close each call is used as our Key Performance Indicator.

A total of 9379 calls were logged between January 2022 and May 2023. Good compliance (94%) was demonstrated in the calls that were closed within the required time in the MOLES system. For previous years this was >97% in 2020 and >95% in 2021. There was a ~6% increase in workload between 2020 and 2022. There was a low number of inappropriate calls (5%). Majority of calls had a moderate complexity (84%). The top reasons for calls were general antibiotic advice (33%), escalation advice (23%), and oral switch/duration advice (20%). The grades of majority of callers were FY (29.5%), Clinical Fellow (22.2%), and ST (10.47%).

Local users feel MOLES is a good way to manage call volumes. Asking callers to check guidelines in advance means we receive a low number of inappropriate calls. We find this is an efficient means to manage our busy clinical workload.

P087

Trends in the emergence of Carbapenemase producing organism (CPO) infections in the UK – An overview

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Abstract

CPOs remain an emerging cause of high mortality & increasing healthcare costs, and typically have limited susceptibilities to antibiotics making successful treatment difficult in many cases. We aim to analyse the data of patients with CPO blood stream infections (BSI) over the course of 2021 to 2022, to identify the predominant CPO species causing BSI, likely sources of infection and overall all-cause mortality. This is a retrospective observational study. Data was collected from pathology and hospital databases.

Fourteen (14) patients were identified as part of this study who presented with CPO BSI at our University Hospital. The average age on hospital admission was 70-71 years old. 79% of BSI were caused by OXA-48 CPO across three species including E.coli, Klebsiella pneumoniae & Enterobacter cloacae. E.coli and Klebsiella pneumoniae caused 43% and 29% of all CPO BSI, respectively. 57% of infections were caused by a urinary source. Ceftazidime-avibactam was prescribed for 57% of all patients. Twenty one percent (21%) of patients showed mortality within 14 days following their positive blood culture date.

CPOs remain a major threat for the NHS, causing sepsis and related mortality in the vulnerable elderly population. We conclude that infections with OXA-48 CPO strains remain predominant in our cohort and hence empirical use of Ceftazidime-avibactam seems to be a reasonable choice for clinicians. Strict antimicrobial stewardship practices are warranted in managing urinary infections to prevent the spread of CPO.

P088

Staphylococcus aureus bacteriuria: a retrospective one-year service evaluation at a UK tertiary centre.

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Abstract

Introduction:

The clinical management of *Staphylococcus aureus* bacteriuria (SABU) can be challenging. A recent study highlighted the need for local data to inform decision making¹: does SABU represent contamination, urinary tract infection or *Staphylococcus aureus* bacteraemia (SAB)?

Methods:

We reviewed all urine cultures that isolated *Staphylococcus aureus* at Sheffield Teaching Hospitals and Sheffield Children's NHS Trusts over a one-year period (01/01/21 - 31/12/21). This included mid-stream and urinary catheter specimens. We reviewed any positive blood cultures for *Staphylococcus aureus* within one-year of SABU.

Results:

Staphylococcus aureus was isolated from 222 urine cultures from 172 patients during the study period. Patient demographics; gender (102 male, 70 female); mean age (59 years-old, range <1 to 96 years-old, 13 paediatric patients). Specimen origin: primary care (112), inpatients (61), outpatients (28), emergency department (ED) (18) and unknown (3). MRSA was isolated in 11 specimens from 5 patients.

6 patients developed SAB with methicillin-sensitive *Staphylococcus aureus* at a median of 4 days (range -1 to 104 days) post SABU. All SABs occurred in adult male patients; mean age was 65 years-old (range 40 to 82 years-old). 4 of 6 SAB patients died (SAB all-cause mortality of 66.6% at 1 year).

Discussion:

Overall, there was a low rate of SAB associated with SABU (3%). SAB was associated with male gender, older age and urine cultures sent from ED. SAB had a high rate of all-cause mortality. These findings and discussion of the wider literature has led to change of recommendations for SABU management at our trust.

P089

Fusobacterium Gonidiaformans Clinical Case series 2019-2022

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Abstract

Introduction

Fusobacterium spp. are non-spore forming, anaerobic gram-negative bacilli typically associated with oropharyngeal infections. Literature on *Fusobacterium spp.* has typically focused on *Fusobacterium necrophorum* and the associated, Lemierres syndrome. *Fusobacterium gonidiaformans* is infrequently reported with limited case reports. No case series have been identified. This study aims to further characterise clinical syndromes associated with this species.

Methods

Cases of *Fusobacterium gonidiaformans* were identified from microbiology lab database from 2019 to 2022.

Results

26 isolates were identified by MALDI TOF. No beta-lactam or metronidazole resistance was identified.

This report describes 25 patients, age range 0-72. 17 cases were known to be clinically significant. 6 (35%) were male patients. Median age was 37.

Presenting clinical syndromes varied; Abscess 9 (52.9%) thrombophlebitis 3 (17.6%) Ear infection 2 (11.8%) post-partum 2 (11.8%) Osteomyelitis 1 (5.9%)

Empirical treatment was based on clinical syndrome on presentation. Length of treatment varied between 1-90 days. 70.6% of cases were on appropriate empirical therapy. Targeted regimes were beta lactam or metronidazole based. Infection specialists gave advice in 11 cases.

5 were treated as outpatients. 2 required ICU admission.

At 90 days 2 patients remained on antimicrobial treatment.

4 patients were bacteraemic, including 3 patients with thrombophlebitis who injected drugs

Conclusion

This is the first case series to describe clinical syndromes associated with *Fusobacterium gonidaformans*. Improved microbiological diagnostics have expanded clinical syndromes associated with this species. Further studies will need to be done to establish regional epidemiology and risk factors for invasive disease.

P090

An investigation into breast infections caused by Actinomyces

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Abstract

Introduction

Non-puerperal breast infections are often polymicrobial with a predominance of anaerobes and can be chronic or recurrent. Actinomyces are fastidious Gram positive anaerobes, making growth and identification difficult. To understand the epidemiology and management of Actinomyces breast infections, we undertook a retrospective analysis of Actinomyces species isolated in patients in NHS Greater Glasgow and Clyde, from December 2018 – November 2021.

Results

A total of 28 samples yielded Actinomyces from 26 patients. Eight different Actinomyces species were isolated, usually alongside other anaerobic organisms. All patients were non-puerperal females with a mean age of 44 years. Twenty-three (88%) had a history of smoking, 11 (42%) had been treated for a breast abscess within the previous year, and 4 (15%) had a history of nipple piercing.

All patients had a surgical referral, seven were offered surgical management plus antibiotics, seven were offered intravenous antibiotics, and 22 were offered a prolonged (>10 days) course of antibiotics. Notably, metronidazole was commonly prescribed as definitive therapy, although Actinomyces are constitutively resistant.

Clinical recurrence of infection occurred on six occasions, with one confirmed case of Actinomyces on culture. Three patients had a clinical recurrence at 1-year.

Conclusion

Actinomyces infection can be a feature of complex, polymicrobial breast infections in non-puerperal women, requiring management input from surgical teams. Consideration should be given to telephonic communication of Actinomyces in order to ensure that appropriate antibiotics are prescribed. There is need to raise awareness among clinicians of the inherent resistance to metronidazole in this group of bacteria.

P091

Idiopathic Pulmonary Fibrosis (IPF) exacerbations, microbiology and management.

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Abstract

Introduction: IPF exacerbations cause significant morbidity and mortality. There is no national guideline regarding the investigation and management of individuals with exacerbations of IPF.

Objectives: Review the practice of microbiological investigation and management of IPF exacerbations in a tertiary referral centre in Ireland.

Methods: Retrospective review of 166 IPF patients attending the Interstitial Lung Disease centre between 2017-2022. Patient records and laboratory information system were used to review patients with positive microbiology.

Outcomes: Fifty-three patients (32%) had respiratory samples sent to the microbiology laboratory. There were 26 culture positive samples in this cohort, from 17 patients. Of the culture positive samples, 13 (50%) were taken during exacerbations whilst 13 (50%) were taken when no infection was suspected. The most commonly isolated pathogens in IPF exacerbations were *Escherichia coli* (n=3) and *Haemophilus influenzae* (n=3). Organisms isolated from those with no suspected infection included *Escherichia coli* (n=4), *Klebsiella pneumoniae* (n=4) and *Staphylococcus aureus* (n=3). 7/28 (25%) isolates were multidrug resistant. Exacerbations were treated with amoxicillin/clavulanic acid monotherapy (n=9), piperacillin-tazobactam monotherapy (n=5) and amoxicillin/clavulanic acid with clarithromycin (n=3). 17/28 (61%) isolates were resistant to amoxicillin/clavulanic acid. Antimicrobial treatment was continued on 8 occasions where resistance to the antimicrobial prescribed was reported.

Implications: This audit highlights the common organisms isolated from patients with IPF and suggests that microbiological investigation is not routine and that treatment decisions are empiric rather than guided by microbiological results. Further prospective studies are warranted to evaluate whether local guidelines specific to IPF exacerbations should be produced.

P092

A case of *Arcanobacterium haemolyticum* bacteraemia, and polymicrobial septic arthritis

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Abstract

Arcanobacterium haemolyticum is a rare human pathogen, most commonly associated with pharyngitis and skin/soft tissue infection. We present a case of *Arcanobacterium haemolyticum* bacteraemia and polymicrobial septic arthritis. A 37-year-old woman presented with right groin pain, fever, and inability to weight bear. Notably, she was a person who injects drugs (PWID) and had injected two days prior into that groin. She was significantly allergic to penicillin.

MRI revealed marrow oedema suggesting early septic arthritis. Due to anaesthetic risk she was initially managed conservatively. Ultrasound-guided aspiration was performed, yielding some turbid yellow fluid, and she was started on IV vancomycin empirically. The following day her admission blood cultures flagged (43h) with gram-positive bacilli, subsequently identified as *Arcanobacterium haemolyticum*; the aspirated pus also grew *A. haemolyticum*.

Several days into treatment, she had persistent fevers and a rising CRP. Further blood cultures grew unviable anaerobic species for which metronidazole was started, and her joint was debrided in theatre. Theatre samples grew *Prevotella*, *Porphyromonas* and *Actinomyces*. Following a further period of intravenous antibiotics, she improved clinically and was switched to oral clindamycin, but absconded from care.

'Needle-licking' is a common practice in PWID, and we suspect that this (or an otherwise contaminated needle) introduced *Arcanobacterium* (rarely seen beyond the pharynx) into both the bloodstream and the joint, as well as the various anaerobes. Due to penicillin allergy, these were not initially covered. This case highlights that PWID with allergies may need broader empirical antimicrobials due to the risk of inoculation with such organisms.

P093

Improving antimicrobial susceptibility testing (AST) of *Campylobacter ureolyticus*

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Abstract

Campylobacter ureolyticus is a gram negative, anaerobic bacillus, initially identified as *Bacteroides* species but recently reclassified. The UK Anaerobic Reference Unit utilises EUCAST anaerobe breakpoints and not *Campylobacter* breakpoints to interpret *C. ureolyticus* susceptibilities and produces a standard AST panel. Our aim was to describe the microbiology of *C. ureolyticus* infections and standardise local AST testing. Between January 2020 and May 2023 we identified 25 isolates. *C. ureolyticus* was associated with breast abscess in 56% (14/25) samples. Overall, 92% of infections were polymicrobial, and of these 91% (21/23) were found with other anaerobes. For all samples, biomedical scientists queried which susceptibility tests were required and 88 e-tests or disc tests were requested for 23 isolates. 58% (51/88) of the antibiotic sensitivity tests requested were not effective against gram negative anaerobes. In 63% (15/24) isolates, metronidazole and co-amoxiclav was requested. We found evidence of variability in AST interpretation with AST being determined against pharmacokinetic/pharmacodynamic, *campylobacter* and anaerobic breakpoints. 64% of patients (16/25) were treated with either co-amoxiclav or metronidazole in combination with another antibiotic.

In conclusion, there is wide variation in AST testing of *C. ureolyticus* including interpretation of breakpoints. Despite the large number of AST tested, many are not clinically relevant as most are treated with co-amoxiclav and metronidazole. We propose that co-amoxiclav and metronidazole are tested on all isolates as standard and against EUCAST anaerobe breakpoints, helping to reduce cost and the number of consumables used and decrease microbiology workload.

P094

Investigating the prevalence, inflammatory responses, and echocardiographic findings of Infective Endocarditis in *Streptococcus viridans* group bacteraemia

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Abstract

Background

Infective endocarditis (IE) is a deep-seated cardiovascular infection with a high mortality rate. Current international IE guidelines recommend blood culture (BC) positivity with viridans group Streptococci to be a major diagnostic criterion. However, recent studies have suggested that IE risk differs significantly amongst species within the viridans group.

Methods

To estimate IE prevalence, we investigated all patients ≥ 18 years old admitted at Sheffield Teaching Hospitals between 2016 and 2022, with ≥ 1 peripheral BC sample positive for Streptococcal species. We compared inflammatory responses in patients with and without a diagnosis of IE using several biomarkers (haemoglobin, C-reactive protein, white cell, and platelet count). Data on demographics, risk factors and echocardiography were collected.

Results

From 258 patients, we found the highest IE prevalence with *S. mutans* (70% [95% CI, 34.8 – 93.3]) and *S. gordonii* (75%, [95% CI, 19.4 – 99.4]). Although more frequently found to cause bacteraemia, *S. mitis/oralis* and *S. gallolyticus* had lower IE prevalence at 12.8% (95% CI, 4.8 – 25.7) and 19.6% (95% CI, 9.4 – 33.9) respectively. No IE cases were reported with *S. salivarius* and *S. vestibularis*. No significant differences were observed on comparing trends of inflammatory markers in IE and non-IE cases. Prosthetic valve IE was commonly encountered with *S. mutans* and *S. sanguinis*.

Conclusion

Our results demonstrate how IE risk varies depending on the species isolated. Timely identification of species could help risk-stratify patients with suspected IE and lessen diagnostic challenges. Further studies including genomics are required to explore the inherent differences amongst Streptococcal species causing IE.

Category: Collaboration and networks

P095

Collaborative antimicrobial use in the critical care setting

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Abstract

Beta-lactam antibiotics affect their bactericidal action through duration of time in which the free concentration in serum is above the MIC of the organism. Changes in pharmacokinetic parameters in setting of sepsis and shock can result in sub-therapeutic concentrations. Extended infusion results in sustained beta-lactam concentrations and increased bacterial killing and were recommended by Surviving Sepsis Campaign in 2021. Due to practicalities, the Scottish Antimicrobial Prescribing Group (SAPG) recommended that this is implemented with priority in critically unwell patients. To bring NHS Lothian practice into alignment with this guidance, a multidisciplinary group between critical care physicians, critical care nurses, pharmacy and microbiology was formed to produce a guideline on delivering piperacillin-tazobactam via extended infusion. It was initially trialled in one critical care unit within NHS Lothian. Audit of this 2-month pilot found that 13 patients received piperacillin-tazobactam via extended infusion. The main issues identified were variability in prescribing of the extended infusion and lack of vascular access but overall the protocol use was successful. Wider education around the protocol use was implemented following this and the protocol was rolled out to all critical care units across NHS Lothian. Repeat cycle of feedback on the protocol use showed that the protocol and prescribing of the extended infusions was clear and safe. This has been a successful example of interdisciplinary working for effective antibiotic use.

Category: Decontamination

P096

Investigating the source of *Paenibacillus pasadenensis* contamination in a human donor milk bank: it will all come out in the wash.

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Abstract

The milkbank at Southmead Hospital processes approximately 20L of breast milk weekly. Pre and post-pasteurisation testing is undertaken by UKHSA Environmental and Food Laboratory Services in accordance with NICE Milkbank testing guidance.

In January 2023 the milkbank was alerted by UKHSA that several post-pasteurisation samples over a short period had cultured *Paenibacillus pasadenensis* (PP), not identified previously in any of our donor milk samples. These donations came from 5 different donors and only in their post-pasteurisation milk samples. Published literature available on PP was scant but it was noted that it produces a heat-stable spore which has been associated with milk spoilage in industry.

The milkbank pasteurisation process was immediately reviewed, but found no evident breaches in handling technique or sources of possible contamination. Utensils were submitted to the UKHSA laboratory for culture, as were swabs from inner seals of the dishwasher used to wash sieves, whisks, and storage containers. Pending results all milk donations received were submitted for post-pasteurisation testing.

On culture, all equipment was negative for PP but the dishwasher seals cultured PP. The dishwasher was immediately replaced. All milk donations were submitted for post pasteurisation testing for a further 3 months, with no further positive PP cultures.

Paenibacillus pasadenensis has rarely been reported in human infection and never yet in neonates. Contamination incidents in donor milkbanks, with any organism capable of producing heat-stable spores, should prompt scrutiny of the whole pasteurisation process and we suggest, rejection of the donated milk batch – irrespective of the cfu count.

Category: Diagnostics

P097

A mixed methods service improvement project to investigate the motivational reasons why swab and urine samples are sent for microbiological analysis.

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Abstract

Objective – The purpose of this project is to identify the motivational reasons why swab and urine samples are requested in the hospital and community setting, with the aim of reducing unnecessary testing. Excessive sampling has a direct impact on environmental health, resource availability, sample turnaround time and patient care. Positive samples often lead to antibiotic prescription and a cascade of further testing.

Methods – A 16 part questionnaire was distributed among a variety of health care professionals. Upon completion participants could volunteer to participate in follow up interviews. Interviews consisted of 7 questions and were conducted remotely.

Results – 88 participants completed the questionnaire and 5 were interviewed. The results of the questionnaire were varied, and few trends were identified. The interviews yielded many ideas for improvements to practice including training and protocol recommendations.

Conclusion – It is currently unclear with whom the responsibility to request a sample lies. From the interviews it has become evident that this decision is often one based on clinical experience, rather than protocol. The time at which a sample is reviewed and when antibiotics are started varies greatly among healthcare professionals. Interview participants expressed a need for training, so long as this was tailored to different specialties' patient populations.

P098

A microfluidic device for differentiating bacterial and Viral Infections

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Abstract

Delayed diagnosis and common symptoms of bacterial and viral infections often result in inappropriate patient treatment. Rapid diagnosis of bacterial infections is still a challenge, and delayed results may lead to unnecessary consumption of antibiotics in case of a non-bacterial infection leading to antimicrobial resistance (AMR). A point-of-care (POC) test that can differentiate between bacterial and viral infections with high accuracy is the need of the hour. For developing the POC test, biomarkers with high sensitivity and specificity are requisite. CD64 and CD169 expression on neutrophils and monocytes have been identified as a significant combination of biomarkers for differentiating between bacterial and viral infection respectively. The cell surface protein is usually quantified using flow cytometry which is time-consuming and expensive. Here, we have developed a microfluidic system consisting of a cartridge for selectively labeling these surface biomarkers and a fluorescence reader to quantify the expression of these biomarkers. The system has been tested with an in-vitro model by inducing an infection state on neutrophils differentiated from Human Leukemia 60 (HL60) cell line. The results show an excellent correlation between infection and biomarker expression.

P099

Syphilis Serology: Switching from TPPA to TPHA

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Abstract

Background:

Syphilis is a sexually transmitted infection caused by the spirochaete *Treponema pallidum*. *Treponema pallidum* particle agglutination (TPPA) assay has been used to confirm syphilis antibody detected by first-line enzyme immunoassay (EIA) screening. Here we describe an evaluation of four commercially available *T. pallidum* haemagglutination assay (TPHA) kits to replace the TPPA assay, which has been withdrawn from the UK market.

Methods:

Four commercially available TPHA kits were evaluated; BioRad TPHA 200 Tests, Arlington Scientific Inc (ASI) TPHA Test Kit, Rapid Labs TPHA 500 Test Kit and Newmarket Biomedical Ltd (NewBio) TPHA 200 Test Kit. TPHA performance characteristics were evaluated by testing 86 stored serum samples with TPPA assay results available from UKHSA reference laboratory, Bristol. All four TPHA kits were setup as per the manufacturers' instruction.

Results:

Clinical sensitivity of all four TPHA kits ranged between 87.2%-92.3% compared to the gold standard TPPA result. The best performance characteristics were demonstrated by ASI and NewBio Kits; 92.3% sensitivity, 100% specificity and 96.5% concordance with TPPA results. All four TPHA kits showed discordant results to three TPPA positive serum samples which had low TPPA titre result ($\leq 1:320$).

Conclusion:

All four TPHA kits were less sensitive than the TPPA assay. Performance characteristics of all four TPHA assay kits evaluated were highly similar; with ASI and NewBio performing marginally better. Switching to TPHA will result in reduced ability to confirm positive EIA results on low level syphilis positives. On implementation of TPHA clinical reporting algorithms were changed to account for this.

P100

Doing the right thing isn't always an easy thing. Clinical and financial impact of in-house viral PCR testing on paediatric cerebrospinal fluid samples.

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Abstract

Optimising the management of paediatric patients with fever is essential to ensure the best patient outcomes. Improving the speed of diagnostics for cerebrospinal fluid (CSF) improves diagnostic certainty, supports antimicrobial stewardship (AMS) and reduces length of stay (LoS).

Aim:

To ascertain the impact of viral PCR in-house testing would have on turnaround times (TAT), diagnostic certainty and patient management. A secondary aim examined if the increased cost of in-house testing could be off set elsewhere in the patient journey through changes in prescribing, AMS and LoS.

Methods:

28 samples CSF samples were tested over a 3-month period. Each sample was tested in-house on a syndromic PCR panel and at the referral laboratory. TAT were compared for both in-house and referral testing pathways. Impact of rapid in-house testing had on clinical management was assessed using a questionnaire completed by the clinical team for each patient.

Results:

Re-patriation of CSF virology testing demonstrated significantly reduced turnaround times. Median TAT for in-house assay was 16.54 hours compared to referred TAT of 88.95hrs. 22 questionnaires were returned (28 issued). Availability of rapid in-house virology results changed the management of 32% of patients. Clinical management changes included antimicrobial prescribing and reduction in length of stay.

Conclusion:

The pilot study demonstrated that in-house testing positively impacted patient management through ceasing inappropriate antimicrobials, supporting AMS and reducing LoS.

Rapid diagnostics come at an increased price. This study demonstrates that increased expenditure generated by improved diagnostics would be offset by savings in bed days and improved patient outcomes.

P101

Implementation of local HBV and HDV viral load testing and its impact on patient outcome at NHS Grampian

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Abstract

Management of chronic hepatitis B (HBV) and hepatitis D (HDV) infections involves measurement of viral load (VL) at diagnosis and at 3-6 months intervals during treatment to monitor response. The current practice of VL testing in NHS Grampian involves sending samples to reference laboratory. We aimed to utilize the already available Alinity m platform and expertise used locally for other blood-borne viruses (BBV) like HIV and HCV VL testing, and introduce local HBV and HDV VL testing to reduce turnaround time (TAT) and cost.

A five-year data (01/01/2018 –31/12/2022) of samples received for HBV and HDV VL testing was analysed for epidemiology, results, location, TAT and cost of testing.

A total of 3232 samples were received for HBV VL during this period. Of these, 53.4% (n= 1728) had detected VL and 16 days average TAT. The majority of samples 58.8% (n=1902) were received from the liver clinic. For HDV VL, 213 samples were received, with 27 days average TAT. Of these, 7% (n=16) had detected VL in which majority 75 % (n=12/16) were from liver clinic. Compared with local VL testing for other BBV, TAT is 2-7 days .Cost analysis indicates local BBV VL testing is 60% less than costs of referred HBV and HDV VL testing.

There is a high burden of HBV and HDV infection locally and an apperant clinical need for streamlined monitoring of therapy for this patients cohort. Referral tests has long TAT and high cost implications that can be reduced with repatriating these assays locally.

P102

Optimising the blood culture pathway- measurement allows improvement. Collection of local data related to pre-analytical stages of the pathway and identifying quality improvement opportunities.

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Abstract

Improving blood culture (BC) diagnostics supports better antimicrobial stewardship and improved patient safety. In 2022, NHS England laid out proposals to improve the pre-analytical phase of the BC pathway. In response, a local working group has been established to assess current performance against proposed BC pathway targets and to identify quality improvement opportunities.

To establish current adherence to NHS England proposal the Microbiology laboratory has collected data related to time to incubation and blood culture fill volume across Gloucestershire Hospitals NHS Trust (GHNHSFT). Volume of blood culture bottles was calculated from the bottle weight measured on receipt in the laboratory. To understand barriers to meeting 4-hour to incubation and adequate fill volume targets a Trust-wide questionnaire was sent out.

The average fill volume was 7.5mL over the study period. The average time from sample collection to bottle loading on instrument was 5 hours, with a difference observed between the two hospital sites. The proportion of bottles incubated within the 4-hour target was 64.8%.

Questionnaire responses were received from a range of clinical staff working across medicine, surgery and critical care. The majority of staff responding had received training on blood culture collection. 38% were aware of the optimal 8-10mls volume and the majority knew that bloods need immediate transportation to the laboratory. Barriers to blood culture collection highlighted included difficulty obtaining blood culture sets, staffing pressures and difficult venous access.

This data will be used to target interventions and assess the impact of interventions related to the blood culture pathway.

P103

Rapid diagnostics to improve the management of meningitis and encephalitis.

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Abstract

Meningitis and encephalitis are life threatening conditions requiring prompt treatment. Successful outcomes rely upon early diagnosis of the condition and identification of the specific causative organism. Routine diagnostics currently relies on CSF culture and off-site molecular testing, which takes >48hrs. The QIAstat-Dx ME is a rapid multiplex PCR testing panel identifying 15 bacterial, viral and fungal targets from cerebrospinal fluid (CSF). This study aimed to look at the ease of implementation, sensitivity, and specificity of the QIAstat-Dx ME for the examination of CSFs.

All CSFs from children <16 years and from adults with raised cell counts were included in the study. All samples had cell counts, routine culture and in-house PCR (Enterovirus, VZV, HSV). Further testing at reference laboratories included meningococcal, pneumococcal PCR, 16S or species-specific PCRs. In total, 35 CSFs were included in the study, 22 from children and 13 from adults. Of these, 15 samples were positive on QIAstat-Dx, Enterovirus (8), VZV (2), Human Parechovirus (1), HSV2 (1), HHV6 (1), *Streptococcus pyogenes* (1), and *Neisseria meningitidis* (1). These findings showed 100% agreement with the current diagnostic methods used and a reduction in turnaround time on average by 42.8 hours.

Implementation of the QIAstat-Dx ME has the potential to reduce turnaround times for CSF samples with a processing time of around 2 minutes and a run time of 78 minutes. A rapid identification of causative organisms could see a decrease in empirical antibiotic treatment, decreased length of stay and improved patient management.

P105

Implementation of Influenza A Point-Of-Care-Testing in a London-based District General Hospital

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Abstract

Background

Influenza A remains a major cause of hospital admissions during winter. Since the COVID-19 pandemic, patients are screened for high-prevalence respiratory viruses, including influenza A, using PCR. Point-of-care-testing (POCT) presents an opportunity to diagnose these infections at lower cost (approximately £20/unit compared to £60/unit for lab PCR) and faster result turnaround (15min). The aim of this audit was to compare POCT and PCR testing for influenza A.

Methods

Retrospective analysis of influenza A testing results between 05/12/2022 and 25/01/2023 was performed at a London-based District General hospital. Only patients with both lab PCR (gold-standard) and POCT for influenza A, within 72h of each other, were included. PCR results for other routinely-screened viral respiratory infections were also recorded.

Results

Of the 1981 patients who had viral POCT screening, 971 (49.0%) also had PCR results for influenza A; 140 tested positive for influenza A on POCT, 831 tested negative. Sensitivity of 79.1% and specificity of 98.6% for the POCT were calculated, with 34 false negative results of which 24 were admitted to a ward and 2 to ITU. Of those positive for influenza A, 2 (1.2%) also tested positive for COVID-19 and 1 (0.6%) for influenza B, with no other identified co-infections. Total cost of PCR was approximately £200K for winter months.

Conclusion

The sensitivity and specificity of influenza A POCT was similar to previous studies. There were no major infection control incidents with false negative results. Therefore, POCT may play a valuable role in the detection of influenza A.

P107

Automated microfluidic cartridge-based system for infectious disease diagnosis

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Abstract

The need for molecular assays in infectious disease diagnosis is growing, and nucleic acid extraction is a crucial preanalytical step in any molecular assay. The quality and quantity of extracted nucleic acids significantly impact downstream processes and the accuracy of results. Monitoring the performance of nucleic acid extraction methodology is essential for obtaining reliable results. However, the multiple steps involved in the process, such as lysis, washing, and elution, require specialized equipment and skilled personnel, making it challenging in resource-limited settings.

To address these challenges, we developed an automated microfluidic cartridge that provides high-purity nucleic acids with minimal turnaround time. The ideal point-of-care nucleic acid extraction method should be user-friendly, rapid, and not compromise on sensitivity and specificity. Our system meets these requirements, providing a simple, rapid extraction process with high sensitivity and specificity.

The airtight sealed cartridge with pneumatically controlled operations ensures operator safety and a contamination-free extraction process. This lab-on-a-chip system is both cost-effective and compact, making it ideal for resource-limited settings without access to expensive instrumentation or refrigerated storage.

The cartridge has been thoroughly tested for extracting bacterial and viral nucleic acids from various biological samples and clinical isolates, including the SARS-CoV-2 virus. Furthermore, this versatile system can be modified to simultaneously extract nucleic acids from infectious agents and detect them using nucleic acid amplification techniques within the same cartridge. With its robust capabilities, this innovative technology will be an invaluable asset in the accurate and timely identification of infections within clinical specimens.

P108

OPTIMISATION OF NON-O157 SHIGA TOXIN-PRODUCING *ESCHERICHIA COLI* (STEC) IDENTIFICATION IN A ROUTINE CLINICAL NHS LABORATORY

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Abstract

Non-O157 Shiga toxin-producing *Escherichia coli* (STEC) are now widely recognised as a cause of disease ranging from diarrhoea to potentially fatal haemolytic uraemic syndrome. The introduction of PCR to allow detection of Shiga toxin genes (*stx1* and *stx2*) into routine clinical NHS laboratories has increased the number of STEC infections detected. However, whilst isolation and identification of *E. coli* O157 is routinely performed in NHS laboratories, there is significant delay in confirmation of non-O157 STEC results as samples are referred to the Gastrointestinal Bacteria Reference Unit (GBRU). This may impact on the public health response. The Royal Cornwall NHS Trust has introduced a selective, chromogenic medium (Colorex™ STEC, E&O Laboratories Ltd) and a latex agglutination kit for serotypes O26, O45, O103, O111, O121 and O145 (Prolex™, Pro-Lab Diagnostics) into the routine algorithm for culture of *stx*-positive samples, to improve the turnaround time for samples positive for the most common non-O157 STECs. Over a fourteen-month period, the laboratory confirmed the presence of *E. coli* O157 in 9 patients and non-O157 STEC (O26, O145 and O103) in 11 patients. The optimised pathway allowed serotypes to be available within 24 hours of receiving the sample and notification to the Health Protection Team significantly earlier than previous protocols allowed. In addition, the laboratory isolated serotypes O5, O70, O71, O98, O146 and O182 on the chromogenic media, which were confirmed at GBRU. A further 19 patients were PCR positive, chromogenic culture-negative but identified as culture-positive for non-O157 STECs at GBRU (14 different serotypes).

P109

Volatile Compounds as an Infection Diagnostic Tool; Development of a Graphene-Based Volatile Sensor.

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Abstract

Biofilm infections, such as chronic wounds and chronic pulmonary infections, lead to increased morbidity and mortality in healthcare settings. Low molecular weight volatile compounds released as by-products of microbial metabolism provide a promising avenue for early detection. Current analytical volatile detection technologies (e.g., Gas Chromatography-Mass Spectrometry (GC-MS) and Selective Ion Flow Tube Mass Spectrometry (SIFT-MS)) are widely used but difficult to implement for real-world/clinical applications. E-Noses and Metal Oxide Sensors provide portability but lack real-time detection and robust back-end data analysis for microbial identification. Graphene-based sensing technologies have provided a platform for a prototype sensor (developed by Altered Carbon Ltd.) that this research aims to validate as a proof-of-concept device for microbial volatile detection and identification.

Volatile compounds from planktonic culture (late exponential and stationary phases of growth) of selected healthcare-associated microorganisms were determined using GC-MS, SIFT-MS and K9Sense, resulting in a base volatile profile for sensor development and testing. The planktonic volatile profiles generated formed the baseline for biofilm studies and sensor optimisation. A Multi-Chamber Volatile Detection System (MCVDS) was developed and implemented for in vitro testing of K9Sense performance, enabling the detection of mixed volatiles with temporal variation. The MCVDS enabled; (1) easy sample manipulation, (2) introduction of known gases/volatiles for interaction studies, (3) multiple sampling chambers with minimal background, and (4) adaptability to test multiple detection systems simultaneously. Identification of unique microbial volatile profiles/fingerprints using a graphene-based sensor shows potential for rapid infection detection and identification in healthcare settings.

P110

Evaluation of diagnostic accuracy of the Rapid antimicrobial susceptibility testing – direct disk diffusion (RAST- dDD) compared with conventional AST in positively flagged blood culture bottles for select gram positive and gram-negative organisms

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Abstract

OBJECTIVES: To evaluate the performance of Rapid -direct disc diffusion test (EUCAST-RAST) from positively flagged blood culture (BC) bottles for relevant sepsis pathogens.

MATERIAL AND METHODS- Standardization of RAST was done using BC broths spiked with isolates with defined resistance. In phase2, EUCAST-RAST was validated on 500 positive culture broths - 100 each of E.coli, K.pneumoniae, P. aeruginosa, S.aureus and Enterococcus species. The BC were processed immediately and AST was performed by EUCAST- standard disc diffusion and EUCAST-RAST . Reading was done at 4, 6 and 8 hrs by 3 independent observers. Genetic mechanism of resistance was also studied. Scatter plots were constructed and categorical agreement, very major error, major error, and minor errors were evaluated in accordance with the International Organization for Standardization criteria.

RESULTS: For five pathogens , most inhibition zones could be read after 4 h. Overall the VME and ME decreased from 4-8 hours. For E.coli and K. pneumoniae at 8h , CA> 93% for cefotaxime, ceftazidime, ciprofloxacin, amikacin and CA=100% for piperacillin-tazobactam and meropenem was observed . Excellent results were observed in case of P.aeruginosa for all tested antibiotics at 8 hours. RAST was successfully identified all cephalosporin and carbapenem resistant E.coli, K.pneumoniae, P.aeruginosa. RAST correctly identified all methicillin-resistant S.aureus and vancomycin resistant Enterococcus faecium at 4-6 h. RAST for Gentamicin raised challenges for most pathogens

CONCLUSION: RAST shortens turnaround time, is reliable tool to improve the clinical management of sepsis by providing rapid phenotypic susceptibility data. RAST method can be implemented in routine laboratories with laboratory workflow adjustments

P111

Ochrobactrum dejeonense bacteraemia? A MALDI-TOF misidentification

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Abstract

MALDI-TOF has transformed microbiology laboratory workflow over the last decade. The genus *Ochrobactrum* has close phylogenetic relation to *Brucella* species. We highlight a potential gap in MALDI-TOF pathogen library for misdiagnosis of *Brucella* spp. , with potential occupational health implications.

A 25-year-old student, recently returned from Saudi Arabia, presented with a three-month history of intermittent pyrexia, night sweats, weight loss and migratory joint pain. Admission blood cultures flagged positive after 55-hours (aerobic bottle, BD BACTEC) with Gram-negative bacilli seen on Gram stain. Following multiple attempts, MALDI-TOF MS identified the isolate as *Ochrobactrum dejeonense* (low score 1.6). Initially this was presumed a contaminant, however repeat blood cultures were positive with the same organism. On further questioning, the patient reported recent consumption of unpasteurised camel milk. *Brucella melitensis* was confirmed on whole genomic sequencing (WGS). The patient responded to appropriate antimicrobial therapy.

This case highlights the pitfalls of laboratory diagnosis of Brucellosis. Laboratories using MALDI-TOF should be familiar with their specific pathogen library. A supplementary MALDI-TOF SR (security-relevant) library is required for identification of *Brucella* sp. This 10-panel library of highly pathogenic organisms is not widely commercially available due to bioterrorism risk. Without this library, such organisms will identify as closely related species, *Ochrobactrum* as in our patient.

This case emphasises the importance of taking a detailed clinical history, repeating blood cultures, WGS to aid diagnostics and rapid identification to appropriately treat patients, but also to avoid occupational exposure of laboratory staff due to manipulation of isolates outside BSL-3 conditions.

P112

The clinical utility of 16S rDNA PCR in a tertiary hospital in the UK

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Abstract

Background

16S rDNA polymerase chain reaction (16S PCR) enables the identification of bacteria in culture-negative specimens from sterile sites when infection is clinically suspected. This test is performed at a reference laboratory thus delays can occur before obtaining results. This study aimed to evaluate the utility of 16S PCR locally in supporting patient care, as a diagnostic and stewardship tool.

Methods

This retrospective study reviewed all patient samples from which 16S PCR had been performed over one year (2022), in a hospital in south-west England. Electronic records were reviewed to assess the impact of 16S PCR results on patient management.

Results

Seventy-seven isolates were sent for 16S PCR, of which 29 (38%) yielded an organism. The most common clinical syndromes investigated were prosthetic joint, and vascular graft infections. The most commonly identified organisms were 'mixed signal', *Staphylococcus* species and *Streptococcus* species.

Of 29 positive results, three (10%) were deemed 'useful', in terms of novel pathogen identification and the result being available in a timely fashion. In those with negative results, this was considered useful in ten (21%) cases.

Conclusion

This study confirms the role of 16S PCR in identifying pathogens when the aetiology is otherwise unknown. However, the result was often not useful, largely due to long turnaround times from sampling to result, or identification of the organism by another method before 16S PCR result was ultimately available.

Future work will extend to another hospital in south-west England, to further evaluate the role of 16S PCR in diagnostic stewardship.

P113

We need a MALDI-TOF: findings (and predictions of utility) from a retrospective blood culture audit

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Abstract

Introduction

MALDI-TOF is cost-effective and used widely for clinical diagnostic microbiology, however our laboratory still lacks access to this technology. Consequently, biochemical tests (e.g API (analytical profile index)) are used for identification (ID) of microorganisms. Our reliance on a superseded methodology severely limits the diagnostic capabilities of the laboratory, and impacts on the quality of the service offered. This audit was performed to quantify the clinical impacts (of our current predicament) on the management of blood cultures.

Methods

A retrospective audit of 63 positive blood culture results (representing 59 patients) was performed using data from November 2022. The LIMS system plus electronic prescribing records were reviewed to assess whether rapid organism ID on a MALDI-TOF would have had beneficial clinical impacts.

Results

For 44/63 (69.8%) blood cultures an earlier ID would have helped to; i) rule out *S. aureus* (and therefore improve patient safety by reducing clinical risks of 'contaminant calling') 16/44, ii) reduce reliance and time delays of referring isolate to ref lab 11/44; iii) rationalise antibiotics 10/44, and, iv) reduce time wasted on following up the blood culture result 7/44. For 19/63 (30%) of blood cultures, the predicted impact was negligible.

Discussion

The audit predicts clear clinical benefits for 70% of the positive blood culture patients. There are additional far-reaching clinical and laboratory benefits not captured by this audit. The evidence in favour of a MALDI is strong, but it remains unknown whether we will be successful in our bid, given the ever-increasing financial pressures affecting the NHS.

Category: Education and training

P114

The development of an educational pack on sharps injuries based on lessons learned from a retrospective audit.

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Abstract

Background: Sharps Injuries result in anxiety related to the risk of acquiring Blood Borne Viruses (BBVs). The aim of this study was to develop and validate an educational tool based on learnings identified from a retrospective audit at one of the leading Dental Hospitals in the UK.

Method: Retrospective analysis of six-year data (1st Jan 2017- 31st Dec 2022) on sharps injuries and splashes was performed against the gold standard to identify the main learning points. An educational pack was developed, consisting of pre-and post-knowledge assessment questionnaires and scenario-based educational section. Subsequently, the educational tool was trailed on year 4 and year 5 undergraduate dental students.

Results: The highest rate was reported in Restorative and Oral Surgery clinics (46.1% and 22.5% respectively). Additionally, 95.2% of injuries occurred during exposure-prone procedures (EPPs) with only 38.2% of all sharp injuries' donors were successfully consented for BBVs testing. Therefore, the educational pack focused on sharps handling and communication skills for BBVs testing consent. The tool was successful in improving students' knowledge from an average score of 83% to 93% (p=0.00001).

Conclusion: This retrospective audit helped to develop an effective educational tool to enhance-knowledge on reducing the risk and management of sharp injuries.

P115

Bacterial Tree of life QIP: Assessing the efficacy of microbiology teaching in Foundation year doctors and their previous knowledge from medical school

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Abstract

Introduction

Foundation Doctors must regularly prescribe antibiotics and liaise with microbiology. An understanding of bacteria is essential for this; hence effective teaching is vital. We wanted to investigate whether an interactive teaching session is useful for improving knowledge, and whether reflecting on this information via PowerPoint is beneficial. We also wondered what foundation doctors' confidence in microbiology was from their medical school education.

Methods

We asked junior doctors to complete a survey, quantifying their knowledge of the bacterial tree of life before and after the session, and after using the PowerPoint, using a 1-10 scale. We assessed the difference in scores using the paired t-test. These were our primary outcomes, assessed using the paired t-test. We asked how well their medical school prepared them for antibiotic prescribing as an FY1/FY2, again using a 1-10 scale, analysed using ANOVA. We asked for comments on the PowerPoint. These were our secondary outcomes.

Results

11 people gave feedback for the teaching session and presentation, and 6 more people gave feedback on the presentation only. There was a significant improvement in people's scores after the teaching session ($t=6.76$) and before and after the presentation. ($t=3.36$). People from medical schools outside of Birmingham felt more prepared for antibiotic prescribing (5.57 vs 3.9); this wasn't significant ($p=0.07$). Comments stated the presentation was clear and well organised.

Conclusion

The interactive session and presentation were beneficial to the cohort. Further cycles would be useful, increasing the number of participants and further proving whether Birmingham's students are underprepared.

P116

Consolidating infection learning for undergraduate Student Doctors through interactive clinical cases

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Abstract

- **Background:** Undergraduate medical infection teaching is often content heavy and confined to preclinical years, which can undersell its wider relevance. Many foundation trainees commence their careers having had little opportunity to observe where it fits into clinical practice. As part of the infection curriculum at the University of Liverpool School of Medicine, two hour interactive case based infection sessions were trialled with second and fifth year student doctors respectively, guiding them through approaching infection cases incorporating microbiology, clinical investigations and pharmacology knowledge.
- **Objectives:** Session objectives were designed in line with the BSAC undergraduate competencies for antimicrobial prescribing - broadly, this was to increase preparedness toward approaching infection management, heighten confidence in interpreting microbiological results and relate antibiotic mechanism and spectrum to use in different presentations. These sessions also aimed to familiarise students with utilising antimicrobial formularies, liaising with medical microbiology and reviewing antimicrobial regimens in light of antimicrobial stewardship.
- **Methods:** Two sets of four unrelated infection cases were designed at knowledge levels relevant to second and fifth years respectively. Each case guided participants through choosing relevant investigations, identifying causative agents from microbiological tests, choosing and reviewing antimicrobial regimens from a formulary. Group discussion promoted constructive learning. Answers were obtained via Poll Everywhere software.
- **Outcomes/evaluation:** Feedback from the sessions was overwhelmingly positive. Students engaged well with the cases and interactive elements and appreciated the opportunity to revisit prior learning.
- **Significance/implications:** Incorporation of case-based interactivity into infection curricula can provide invaluable consolidation of preclinical microbiology learning and preparation for clinical practice.

P117

A 'train the trainers' approach to infection prevention and control training in pandemic conditions

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Abstract

Background

The first wave of the SARS-CoV-2 global pandemic in early 2020 required rapid roll-out of infection prevention and control (IPC) training for healthcare workers (HCW), including using appropriate personal protective equipment (PPE). Education about respiratory droplet and aerosol transmission was of paramount importance to ensure safe working practices and improve confidence.

Methods

A joint working group of Infectious Diseases and IPC staff developed a 'train the trainers' programme, to be rapidly deployed over a three-week period. This model utilised snowballing approach, training selected staff with the intention that they would train their teams, facilitating swift cascading of information. Targeted invitations prompted staff from diverse departments of the hospital to attend. Pre- and post-session questionnaires evaluated staff confidence with regard to appropriate PPE use.

Results

The programme trained 130 HCW over a three-week period, was well received and led to increased confidence with PPE use amongst staff. Real-time evaluation ensured content could be adapted to the specific needs of HCW involved. We highlight perceived gaps in training despite existing and enhanced training structures.

Conclusion

Provision of face-to-face training in transmission-based precautions, including PPE use, is required to maintain confidence in safe and appropriate IPC amongst hospital staff. We highlight the importance of including non-clinical staff in PPE educational programmes, recognising that these roles are vital for patient care and are frequently patient-facing. We recommend adopting the train the trainers model to facilitate rapid dissemination of education, with interactive multidisciplinary training in future outbreaks to improve HCW confidence and effective IPC.

Category: Environment

P118

A step towards sustainable laboratories: a great LEAF forward

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Abstract

The healthcare sector is estimated to directly account for approximately 5% of the total CO₂e emissions of the UK. More than half of this is indirectly associated with the use of consumable items, such as single-use plastics. Clinical laboratories use large quantities of consumable items and produce huge volumes of non-recyclable plastic waste. They use 3-6 times more energy per m² than a typical office building. The NHS have set targets to be net zero for the emissions which it controls by 2040, and for emissions which it can influence by 2045. The microbiology laboratory at Lancashire Teaching Hospitals (LTH) participated in the pilot of the Laboratory Efficiency Assessment Framework (LEAF) from University College London. This provided a structured process to reduce the environmental impact of our laboratory. The department formed a small team of enthusiastic individuals, The Microbiology Greens (The MGs), to work through the 16-point audit tool, which covered waste, people, purchasing, equipment, IT, sample and chemicals, and ventilation. A range of interventions were implemented, including optimising waste and recycling streams, ensuring autoclaves, fridges and freezers are only run when full, equipment is switched off when not in use, and new contracts and purchases consider the environmental impact as part of the business case. The department underwent a successful audit by the LEAF team and were awarded the Bronze Award. Next steps include progressing towards the silver award, engaging with colleagues in other pathology disciplines at LTH, and improving the calculations of the energy and cost savings generated.

P119

The Efficacy of 6 and 10 Air Changes Per Hour Ventilation in Controlling Air Contamination in Dentistry.

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Abstract

Background: The pandemic coronavirus disease 2019 (COVID-19) highlighted the need for efficient ventilation, especially when aerosol-generated procedures (AGPs) are performed. This study investigated the effect of 10 and 6 air change per hour (ACH) ventilation on air contamination in dental clinics. Methodology: MD8 airscan was used (Sartorius, UK) with sterile gelatine filters to enable RNA extraction for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) Polymerase Chain Reaction (PCR) and with BACTair culture media for bacterial and fungal colony forming unit (CFU) quantification. Sampling air was performed from outside the dirty zone in open clinical areas with 6ACH and 10ACH ventilation when AGPs and non-AGPs were performed in two different dental settings; one of the major UK dental hospitals and one of the outreach dental centres. Results: The air contamination at 10ACH was significantly lower than 6ACH at baseline (13.83 ± 5.4 vs 68.67 ± 74.73 ; $p=0.019$), AGP (177.3 ± 19.04 vs 288.5 ± 108.6 ; $p=0.023$), and non-AGPs (114.7 ± 23.69 vs 245.3 ± 37.97 ; $p=0.007$) in the dental hospital. In the outreach dental centre, 10ACH maintained air contamination at 30.33 ± 26.73 and 18.33 ± 11.85 for non-AGP and AGP, respectively, compared to 192 ± 34.64 for non-AGP in 6ACH ($p=0.0003$). No SARS-CoV-2 was detected in any of the samples. Conclusion: This study proves that 10ACH is an efficient intervention to improve the air quality in open bay dental clinics during all types of dental procedures (AGPs and non-AGPs) in different dental settings, large dental hospital and outreach dental clinics, which has a similar environment of community dental clinic.

Category: Fungal infections

P120

Quality improvement project to develop a protocol for assessing risk of invasive fungal infections in intensive care unit patients and start anti fungal treatment

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Abstract

Introduction

Invasive fungal disease is a major cause of morbidity and mortality in intensive care units. The diagnosis remains challenging and culture results can give false results due to contamination. The detection of Beta D-Glucan (BDG) provides a non-specific indication of invasive aspergillosis, invasive candidiasis or other invasive mycoses.

Objectives

To establish how and why Beta D glucan Assays are used in our cohort of Intensive Care Unit patients, to establish a protocol in assessing, and starting antifungal treatment of fungal diseases in intensive care units.

Methods

A total of 140 patients were admitted in the intensive care unit over a period of 2 months from May to June 2022; out of these, 12 patients were undergoing antifungal treatment and their data was recorded on an excel spreadsheet.

Results

The average number of days that antifungals were given was 10 days. Beta D-Glucan result was positive in 50 % of patients (6 out of 9 patients). 33 % of patients suffered from decompensated liver disease and tested positive for fungal disease and 17 % patients had severe sepsis. Beta D glucan tests took an average 7 days to report, and sometimes required repeat samples to be sent.

Conclusions

The variability in BDG testing, the inconsistent test reporting times, and lack of consensus on duration of antifungal treatment were evident. Based on these findings, an action plan was constructed.

Recommendations: 1. Produce a standardized pathway for the prescription of antifungal agents 2. Use candida scores for prescribing antifungals 3. Follow Beta D glucan assay values .

P121

Need for standardised *Pneumocystis jirovecii* pneumonia prophylaxis guidelines in the immunosuppressed cohort without HIV infection

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Abstract

Background: *Pneumocystis jirovecii* pneumonia (PJP) is a growing concern in people without HIV due to increasing use of immunosuppressive therapy. National PJP prophylaxis guidelines exist for many specialties but differ in their inclusion criteria and recommendations.

Methodology: A retrospective observational study was conducted to identify patients with PJP (July 2021 to May 2023) across two NHS hospitals (London, UK). Cases were identified by a case-note review for inpatients who received high-dose co-trimoxazole and had probable infection (defined as confirmatory radiological evidence and/or positive beta-D-glucan and/or detected PJP PCR in bronchoalveolar lavage or sputum). Patients diagnosed with HIV were excluded. Data on all-cause mortality and PJP risk factors were collected.

Results: Twenty patients were identified with PJP. Specialties for immunosuppression were haematology (n=6), respiratory (n=4), nephrology (n=3), oncology (n=3), rheumatology (n=3), and dermatology (n=1). Eleven (55%) patients died during their admission for PJP treatment. Of the 20 patients, only 1 was concomitantly receiving PJP prophylaxis at time of diagnosis. Fifteen patients met the inclusion for starting PJP prophylaxis from guidelines for their own specialty (n=7) or another specialty (n=8), yet prophylaxis was omitted. One patient was on immunosuppressive therapy but did not meet PJP prophylaxis criteria, and 3 did not receive immunosuppressive therapy but had underlying haematological malignancy or interstitial lung disease.

Conclusion: Mortality for PJP is high and affects a wide range of specialties that utilise immunosuppressive therapy. Harmonised and strengthened national guidelines for starting PJP prophylaxis in immunosuppressed or at-risk people would be beneficial.

P122

Successful implementation of an Anti-fungal Stewardship Multi-disciplinary Team Meeting at a large teaching hospital in Bristol

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Abstract

Background

Antifungal stewardship (AFS) is paramount to reducing inappropriate Antifungal use. A weekly AFS multi-disciplinary team (MDT) meeting was established in our Trust in 2019. The aim of this project was to assess the outcomes from the AFS MDTs.

Methods

We report on an observational retrospective cohort study assessing the outcomes of patients reviewed at the AFS MDTs during a one year period from December 2021.

Results

174 prescribing episodes from 111 patients were reviewed. The mean age of patients was 50 years.

121 antifungals were prescribed. Echinocandins were the most frequently used followed by Fluconazole. 21 (37%) patients were on a combination of antifungals. Despite the large numbers of antifungals prescribed, only 41 (37%) patients in this cohort had a proven fungal infection. Of those with proven fungal infection, Candida blood stream infections were the most followed by invasive Aspergillosis.

101 (91%) patients had a Beta-D-Glucan test and 51(46%) patients had a Galactomannan test performed.

320 interventions were suggested during the 174 prescribing episodes. Overall, the acceptance of advice from the AFS MDT was good (94%). In 38 patients the AFS team recommended stopping antifungals. Duration and therapeutic drug monitoring was also advised. The one year mortality rate was 39% in this cohort.

The AFS MDT in part led to a fall in the annual expenditure on antifungals by 58% over a 5 year period.

Conclusion

We demonstrate a successful implementation of an AFS programme which led to prudent prescribing of antifungals and cost savings.

P123

Invasive mold infection of the Urinary tract in an immunocompetent patient, case report from Saudi Arabia

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Abstract

Invasive aspergillosis of the urinary tract is extremely rare in immunocompetent hosts. It represents a diagnostic challenge and requires a high index of suspicion.

We report A 31-year-old male known case of mild bronchial asthma who was referred to our center to investigate non-resolving pyelonephritis, His symptoms started 2 months prior with fever and vomiting associated with flank pain and dysuria. He was treated with multiple courses of antibiotics and repeated investigations showed sterile pyuria. His symptoms progressed to frank pus per urethra, significant weight loss, and acute kidney injury which required hemodialysis.

Previous Management included empirical therapy for gonorrhea /chlamydia and a prolonged course of doxycycline for prostatitis. He is nondiabetic, his history didn't illicit risk factors for immunocompromise or invasive fungal infection, and no previous urological procedures.

Workup for tuberculosis, HIV, syphilis, brucella, and endocarditis was negative including blood cultures, urine acid-fast bacilli stain, culture, and GeneXpert. Imaging showed bilateral pyelonephritis with Micro-abscess and severe hydronephrosis. Bilateral nephrostomy-tube drained pus with negative diagnostic yield.

At this stage, a renal biopsy was obtained. Histopathology showed no malignancy or granulomas, but the Special stains revealed fragmented fungal hyphae with inconclusive specifications. Cystoscopy showed an inflamed bladder and both kidneys filled with fungal balls.

Based on this a presumptive diagnosis of invasive aspergillosis pyelonephritis was made. And he was commenced on AmBisome then discharged on Oral Voriconazole. He continued to improve clinically and radiologically throughout his follow-up appointments.

This case illustrates the importance of early renal biopsy in such a presentation.

Category: General

P125

Tuberculosis and Takayasu's Arteritis: an enigmatic association

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Abstract

Abstract

There is indirect evidence indicating a potential link between tuberculosis and Takayasu's arteritis; however, the exact link remains to be elucidated.

Case

A 45-year-old female was referred due to a three-month history of productive coughing, fever, and recurrent dizziness without loss of consciousness. Examination showed absent radial pulses bilaterally and discrepancies in the blood pressures between the upper (90/50 mmHg) and lower limbs (150/90 mmHg). Laboratory tests were within normal limits except for a CRP level of 53 mg/L. CXR revealed a thick cavity in the right upper zone (Figure 1). Sputum for AFB cultures showed a fully sensitive MTB. CT angiography and FDG-PET demonstrated multiple saccular aneurysmal dilatations in the descending aorta and left popliteal artery, highly suggestive of Takayasu arteritis (TKA) (Figure 2). She was commenced on TB chemotherapy and prednisolone (1 mg/Kg per day) with a plan to perform stenting of the descending aorta and popliteal artery after completing tuberculous therapy.

Discussion

TKA is a rare, chronic inflammatory vasculitis that primarily affects large and medium-sized vessels and typically presents in females of Asian descent. The exact relationship between TKA and TB remains to be elucidated given the similarity between histopathological lesions. However, cross-reactivity between mycobacteria and a human heat shock protein or the triggering of superantigens by mycobacteria may play a role.

Intriguingly, treating TB could control TKA activity, and treating TKA with glucocorticoids could increase the risk of TB progression. Therefore, a balanced approach can avoid unnecessary consequences.

P126

The surgical management, antibiotic choice and duration of treatment of Brain Abscesses

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Abstract

The choice and duration of antibiotics, and the surgical management of brain abscesses is poorly understood.

We identified cases of brain abscesses through screening radiology reports (MRI and CT) and manually extracted data.

49 Patients with brain abscess were identified. An organism was isolated in 80% cases and *Strep milleri* was the most common organism isolated (43%). Ceftriaxone and metronidazole were the most common empirical antibiotic (77%).

76% patients received 6 or more weeks antibiotics while only 14% of patients received fewer than 4 weeks antibiotics. Almost 2/3 patients (63%) received their entire treatment IV. Median duration of IV antibiotics was 42 days. Median duration of oral antibiotics was short at 18 days. Median duration of admission was 25 days with around half (49%) of patients requiring further IV treatment on OPAT for a median of 24 days.

Patients who received their entire treatment course IV had higher rates of repeat surgery 42% vs 25% . Oral antibiotics were not associated with increased incidence of late relapse. Small abscess size (<2.5cm) was associated with fewer operations: 20% of patients with small abscesses had >1 operation compared to 52% in the large abscess group (p=0.0472). *Streptococcus milleri* was associated with a higher number of operations (62%). There was also a strong association between initial burr hole surgery and surgical failure: 55% of patients in the burr hole surgery group underwent >1 operations compared to 8% in the craniotomy group (p=0.0077).

Brain abscesses have high health care costs and cause significant morbidity for patients.

P127

Factors influencing community associated Gram-negative bacteraemia are not reflected in current disease reduction strategies

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Abstract

Gram negative bloodstream infections (GNBIs), predominantly associated with urinary tract infections (UTIs), present a huge burden of morbidity and mortality. There are considerable efforts to reduce hospital-acquired GNBIs, but our understanding of the factors influencing community-acquired GNBIs is more limited.

In this study we carried out structured interviews with patients diagnosed with a Gram-negative bacteraemia within seven days of admission. The interview focused on the key intervention points identified by Public Health England and NHS Improvement for the reduction of GNBIs, as well as collecting qualitative data around the patient pre-hospital journey. Our interim results from the 50 interviews conducted so far show that patients presenting with community-acquired GNBIs were generally of older age and frail. Dominant symptoms were non-specific, such as lethargy or confusion, and reported symptoms correlated poorly with the source of bacteraemia. Few patients had a long-term catheter, continence issues, recurrent UTIs or issues with hydration. The majority did not get a pre-hospital medical review. Of those who did receive general practitioner review, just 37% had a urine sample sent and just 21% received antibiotics.

Our associated qualitative analysis also provided valuable insights into the knowledge and attitudes of individuals around symptoms of infection and highlighted perceived challenges associated with access to community services.

These findings indicate that the current foci for intervention to reduce hospital-acquired GNBIs do not consistently translate to the prevention of community-acquired GNBIs. A reviewed strategy for these infections would be an important next step towards reducing the burden of disease.

P128

Late Mortality following Invasive Pneumococcal Disease: A Retrospective Cohort Study

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Abstract

Background: Traditionally considered an acute disease, there is increasing evidence to suggest Invasive Pneumococcal Disease (IPD) is associated with increased longer-term mortality. A previous retrospective cohort study was undertaken with 207 IPD patients Hull University Teaching Hospitals from 2007-2009, in which outcomes were measured two years from IPD diagnosis. This study follows up this same cohort of patients to investigate predictors of late mortality.

Methods: Clinical notes were reviewed to record late mortality in the cohort since the previous study. Life tables were used to calculate expected years lived, and the difference between observed and expected was calculated, and this difference stratified by the presence/absence of each variable to identify associations with significant loss of life years. Multivariate cox proportional hazards models will be constructed, taking a piecewise approach to identify significant predictors for early, intermediate and late mortality.

Results: Late mortality was 28%. The cohort lost 985 life-years compared to expectation from life tables. Age>65, multimorbidity and low-severity serotype infection were associated with significant differences between observed and expected life years lived. Cause of late mortality was LRTI in most recorded cases. Age, Charlson score, care home residence, temperature, sodium, albumin, pCO₂, CRP and acute coronary syndrome were associated with increased risk of late mortality in univariate cox proportional hazard analysis (multivariate results are pending).

Conclusion: numerous variables are associated with risk of late mortality in IPD. Larger scale studies are required to elucidate the nature of these associations and increase knowledge of the disease's natural history.

P129

Changes in Quality of life (QoL) and Functional Status in Staphylococcus aureus (SA) and Group A Streptococci (GAS) blood stream infection (BSIs)- A pilot study at Hull University Teaching Hospitals NHS Trust

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Abstract

Background: BSIs are responsible for significant morbidity and mortality, but there is little evidence of the effects on QoL. Our primary objective is to investigate the change in QoL of BSI over time.

Methods: We conducted a prospective cohort study, with all adult patients with GAS or SA BSI being eligible for inclusion. Standardised QoL questionnaires (EuroQoL-EQ5, Montreal Cognitive Assessment (MOCA), Hospital Anxiety and Depression Scale (HAADS)) used at consent and 28 days post-discharge. Patients were stratified into those whose average aggregated EQ5 score worsened or improved between baseline and d28.

Results: 38 participants were analysed, 27 had improved aggregated EQ5 scores at d28, with 16 males with an average age of 56 years. 23 participants had SA and 4 had GAS. In the improved EQ5 cohort the average improvement in mobility and pain scores were -1.54 and -1 compared to a 0.64($p<0.001$) and 0.73($p=0.002$) in the cohort whose EQ5 score worsened. In the improvement cohort self-care and daily-activity scores both improved by -0.44($p=0.007$ and $p<0.001$ respectively). Health rank improved by 24.74 compared to -2.09($p=0.007$). For those whose score improved, the Total HAADS score improved by -4.77 compared to 3.10($p=0.021$) with a particular improvement in depression scores -2.12($p=0.015$).

Conclusion: In patients whose EQ5 score improved, there is a statistically significant improvement in pain, mobility, functional status, and mental health at 28 days post discharge, when compared to participants whose EQ5 score worsened. Further analysis of which clinical/demographic factors correlate with EQ5 are pending.

P130

Managing severe infections of the external auditory canal: preliminary evidence supporting the use of UK consensus case definitions to aid diagnosis and antimicrobial stewardship

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Abstract

Background

Infection of the external auditory canal is a spectrum from severe otitis externa (SOE) to necrotising otitis externa (NOE). Differentiating these conditions can be challenging, resulting in uncertainty over optimal antibiotic duration. UK consensus case definitions (UKCCD) for NOE were recently published.

Methods

All patients undergoing CT to investigate possible NOE in November 2018 - October 2019 at Oxford University Hospitals NHS Foundation Trust were included and reviewed at 12 months. Initial clinician diagnosis was recorded and compared to UKCCD criteria applied retrospectively.

Results

According to clinician diagnoses, 24% (15/62) of patients had NOE, 67% (40/72) had SOE, and 12% (7/62) had another diagnosis including otitis media or malignancy. Median total IV/oral antibiotic duration was 51, 7, and 11 days respectively. On applying UKCCD criteria, 13% (8/62) were 'definite NOE', 50% (31/62) 'possible NOE' and 37% (23/62) 'not NOE', with median total IV/oral antibiotic duration of 64, 15, and 7 days respectively. All clinical NOE cases were classified as 'definite NOE' or 'possible NOE', whilst none in the 'not NOE' category had clinical NOE. Clinically diagnosed SOE cases classified as 'not NOE' were treated with a shorter duration of IV/oral antibiotics (median 7 days, IQR 0.5-10) than those classified as 'possible NOE' (median 8 days, IQR 4-21).

Conclusion

UKCCD shows concordance with clinical diagnoses at a tertiary ENT referral centre. Use of the diagnostic terms 'not NOE' and 'possible NOE' could help prompt regular clinical review, and shorter courses and more judicious use of antibiotics.

Category: Healthcare associated infection

P131

Role of sweat in biofilm formation on healthcare fabrics

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Abstract

The colonized textile with axillary skin bacteria produces typical sweat malodor and subsequently acts as a vehicle for transmitting infections in healthcare settings. An in-depth understanding of bacterial behavior on fabric is required to prevent infection transmission. In this study, we examined the effect of sweat and environmental parameters [temperature, pH, and relative humidity (RH)] on bacterial growth and biofilm formation (*Pseudomonas aeruginosa*, *Staphylococcus aureus* and *E. coli* as model bacteria) on polyester, cotton, and polyester-cotton (70:30) blend fabrics. To achieve this, artificial sweat was prepared to mimic the physiological sweating process on fabrics. In the presence of sweat, the bacterial strains exhibited maximum growth on polyester fabrics. Qualitative analysis showed that *P. aeruginosa* and *S. aureus* were strong biofilm producers, whereas *E. coli* was moderate. Biofilm formation ability with sweat was correlated with EPS production by bacterial strains. Selected bacterial strains showed maximum biofilm formation at a temperature 30°C, pH 7.0 and RH 62% among the chosen range of temperature, pH, and RH. Biofilm formation was significantly higher on blend fabric, followed by cotton and polyester at 30°C in the absence of sweat. Biofilm formed on fabrics with sweat was visualized by scanning electron microscopy, and 3D topography of biofilm was obtained by atomic force microscopy. In conclusion, this study corroborates that sweat, environmental parameters and textile properties have a significant role in the bacterial colonization of textiles and thereby in the transmission of infections. Designing surface-modified fabrics that discourage pathogen load may help mitigate nosocomial infections.

P132

Quantifying hospital environmental ventilation using carbon dioxide monitoring – a multicentre study

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Abstract

Background: Inadequate ventilation increases the risk of transmitting airborne pathogens, including respiratory viruses, yet is currently not measured in hospital. We aimed to quantify the quality and distribution of ventilation in hospital by measuring carbon dioxide (CO₂) levels.

Methods: We validated the relationship between ventilation quality and CO₂ levels using non-dispersive infrared CO₂ monitors. We then assessed ventilation quality in patient-occupied (clinical) and staff break and office (non-clinical) areas across two hospitals in Scotland, UK.

Results: Between November and December 2022, 127,680 CO₂ measurements were obtained across 32 high-risk areas over 8 weeks. CO₂ levels were high (>800ppm) for 14% of the time in non-clinical versus 7% in clinical areas (p <0.001). In non-clinical areas, CO₂ levels were >800ppm for 20% of the time in both ICU and the wards, versus 1% in operating theatres (p <0.001). In clinical areas, CO₂ was >800ppm for 16% of the time in wards, versus 0% in the ICU and operating theatres (p <0.001).

Conclusions: Staff break, office and clinical areas on acute medical and respiratory wards frequently had inadequate ventilation, potentially increasing the risk of airborne pathogen transmission to staff and patients. CO₂ monitoring could measure and guide improvements in hospital ventilation.

P133

The VINCat Program: a 15-year model of success in infection prevention and control of healthcare-associated infections in Catalonia, Spain

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Abstract

Background: Healthcare-associated infections (HAIs) are a major public-health threat causing significant impact in patient's care and substantial economic burden. The implementation of infection and prevention control (IPC) programs is a challenge. The VINCat Program created by the Department of Health (DH) in 2006 is the IPC program in Catalonia (7,522,596 inhabitants) covering 72 acute-care-hospitals, 92 long-term-care facilities and 44 primary-care areas. **Objectives:** To describe the model of care and to define the major drivers of success implementation. **Methods.** The DH reinforced multidisciplinary teams at the hospital level according to activity and complexity. Mandatory surveillance indicators included point prevalence of HAIs; vascular catheter-related bloodstream infections (VCR-BSI); surgical site infections (SSI); ventilator-associated pneumonia (ICUs); antibiotic consumption; patterns of antimicrobial resistance and alcohol-based hand rub consumption. **Main interventions:** Timely regular data feedback between hospitals and coordinating center, benchmark among participating hospitals, elaboration and dissemination of evidence-based bundles to prevent most frequent HAI and structured antimicrobial stewardship intervention to reduce last resort antibiotics. **Results:** from 2007 to 2023, voluntary participation has reached 100% of public hospital beds and 85% of private hospital beds. Training programs and multimodal strategies to prevent HAIs were implemented. There have been remarkable achievements from decreasing VCR-BSI, SSI rates in specific surgical procedures and interventions based on limiting antibiotic duration. However, the rates of HAIs and antimicrobial resistance highly vary between hospitals. **Conclusion:** The VINCat program provide the data to hospitals for the implementation of targeted interventions. These quality-of-care programs must have institutional support and governance from the Department of Health.

P134

Rates of hospital onset gram-negative bloodstream infections: are further reductions possible?

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Abstract

There is a government target to halve rates of gram-negative bloodstream infection (GNBSI) by 2024/2025. However, UKHSA reports show that since data collection began the rate of GNBSI has remained flat or increased for reportable organisms (*Klebsiella* spp, *Pseudomonas* spp and *E coli*). In the setting of a UK academic hospital with a tertiary haematology unit we reviewed our hospital acquired (HA) GNBSIs to focus on prevention. We retrospectively reviewed 1 year of data (01/07/22 – 30/06/23) of reportable HA GNBSI for clinical source, patient demographics and other risk factors. 191 blood cultures were included in the analysis. We found that, in contrast to national data, the most common source of bacteraemia was gastrointestinal, excluding hepatobiliary, (60, 31.4%) and this included 45 cases of presumed gastrointestinal translocation. Almost half of all GNBSIs came from haematology patients (85, 44.5%) and overall 76 (39.8%) were neutropenic. The second most common source was urinary tract (53/191, 27.7%), of which the majority (34, 64.1%) were in association with a recent catheter. Cases where catheter manipulation occurred within 48 hours prior to GNBSI were reviewed for indications for prophylactic antibiotics in accordance with local and NICE guidelines and no cases met these criteria. No clear targets were identified for reducing rates of HA GNBSIs in this study. Hospitals should review local data for opportunities to reduce HA GNBSI, but in the setting of high proportions of patients with neutropenia there will always be a large percentage of unavoidable infections.

P135

Standardized Infection Ratio (SIR) and Standardized Utilization Ratio (SUR) in monitoring the efficacy of bundles in reducing Central Line Associated Bloodstream infection in Intensive Care Unit due to pandemic COVID-19

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Abstract

Healthcare-associated infections (HAIs) represent a significant challenge in modern healthcare, contributing to increased morbidity, mortality, and healthcare costs. These infections are particularly prevalent in intensive care units (ICUs), where patients are often critically ill and more susceptible to infections.

Bundles in clinical practice have been effective in the prevention of central lines associated bloodstream infection (CLABSI).

The objective of our study was to evaluate the role of tight bundles adherence (CVC insertion and post insertion management) in reducing the incidence of CLABSI, events and the impact on outcomes using NHSN standard infection ratio (SIR) and standard utilization ratio (SUR)

The study was conducted in a ICU of a highly specialized northern Italian hospital.

We observed a total of 1679 admissions in ICU from January 1st, 2018, to December 31, 2022.

We observed an increased incidence rate ranging from 0.6 in 2018 to 4.17 CLABSI per 1000 catheter days in 2021 (probably due to COVID 19 pandemic) and decreased to 1.5 in 2022.

Bundles have been placed in clinical practice, strengthened on the job and shared with the staff starting from October 2021 to December 2021.

A further evaluation, using dSIR showed a decrease of 63% in 2022 compared to 2021. This data was effectively followed by a response in clinical terms as well, with the progressive reduction to zero of CLABSI incidence (during the second quarter of 2022), even in the face of persistently high SUR values.

P136

Ooops! I've switched to oral antibiotics again!: A pragmatic approach to the treatment of Staphylococcus aureus Blood Stream Infection (SABSI) in People Who Inject Drugs (PWID's) and non-PWID groups *Preliminary Data from the PWID Study

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Abstract

Background

Staphylococcus aureus is the leading cause of complicated BSI among persons who inject drugs (PWID); 20% of all SABSI (E&W,2019) attributed to PWID. Intravenous (IV) antibiotics, the standard of care (SOC), result in high rates of treatment success but are not feasible for some PWID and some non-PWID patients necessitating an early IV to oral switch.

Method

Adult patients with SABSI (n=56) were consented for inclusion. All SABSI patients without Penicillin allergy were prescribed 14d IV Flucloxacillin (FLU SOC). Patients were compared by antibiotic treatment using the primary composite endpoint of death within 90d from discharge*

Results

All PWID SABSI infections (n=9) were community acquired, of the 37 SABSI in the non-PWID group 48% were hospital acquired. Penicillin allergy was noted to be 33% in the PWID cohort and 16% in the non-PWID cohort. The PWID group, (44% FLU SOC) were changed, on average, to oral Linezolid (55%) and Clindamycin (33%) at 10d, with an average 27d of further oral therapy. The non-PWID group 84% of SABSI, excluding MRSA, were treated with FLU SOC (84%) for an average of 15d before changing to oral Linezolid (23%) or Cotrimoxazole (42%) to complete an average of 29d further oral therapy.

Conclusions

The treatment of SABSI requires a pragmatic approach, as the source and point at which source control is achieved is often difficult to determine. A recent study (Wildenthal et al, 2023) proposed an oral switch at 10d post SA clearance for PWID, our limited data supports this approach.

Category: Immunisation

P137

A systematic review of the impact of COVID-19 on measles elimination in low and lower-middle income countries.

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Abstract

Background: The high infectivity of measles virus enables disease outbreaks to act as an indicator of gaps in routine childhood immunisation coverage. We aimed to evaluate changes to measles-containing vaccine (MCV) provision and measles cases in low- and lower-middle income countries (LICs, LMICs) in relation to the COVID-19 pandemic.

Methods: A systematic search was conducted on 26/01/2023. Primary quantitative and qualitative research studies were included if they reported on COVID-19 impact on MCV provision and measles disease outbreak within LICs and LMICs.

Results: 45 studies were included. The median decline in first-dose measles vaccine (MCV1) coverage in national and international regional data was -1.0% (-13% to +44.4%) from pre-COVID years to when COVID was in transmission. In local regional data, median MCV1 and overall EPI coverage reduced by -23.3% and -28.5% and improved to +6.75% and +8.05% respectively, in early-recovery time-periods. 4/9 (44.4%) of local regions reporting early-recovery data identified MCV1 vaccine coverage was lower than pre-COVID levels, indicating an outstanding protection deficit. Second-dose (MCV2) vaccine coverage suffered greater impact in local areas during COVID-interruption (-48.2%) with ongoing disruption in early-recovery (-17.7%) compared to the pre-pandemic baseline. 8.9% of studies reported on the vaccination status of measles cases, and 71-91% of infants with disease had received no MCV dose.

Conclusion: The COVID-19 pandemic has had a significant impact on MCV coverage and continues to effect on disease control of this disease. Vaccine security for childhood immunisations must be re-enforced to protect from future threats to vaccine capacity.

P138

Are adults at increased risk of respiratory infection optimally served by current UK vaccination recommendations?

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Abstract

There are several licensed, or soon to be licensed, vaccines to help protect adults against respiratory infections (pneumococcal disease (PD), COVID-19, influenza, and RSV) in the UK. Certain health conditions and social environments contribute to the risk of morbidity and mortality from respiratory infection. COVID-19 and influenza vaccination recommendation are updated regularly, with the COVID-19 pandemic prompting a fresh assessment of those at greater risk. This includes those with BMI \geq 40, those living in residential care settings, healthcare workers (HCWs) and carers. These groups are currently not offered pneumococcal vaccination.

We reviewed recommendations for PD, influenza, and COVID-19 vaccination in the UK and two other high-income countries (USA and Australia).

Notable differences in recommendations against different respiratory pathogens and between selected countries were identified.

USA and Australia include smoking and alcoholism as at-risk groups eligible for PD vaccination. These groups of patients are not explicitly included in UK recommendations but may be indirectly covered (chronic liver / lung disease). Recommendations for influenza vaccination are broader in USA and Australia; USA – all over 6 months old and Australia those with any chronic health condition, including alcoholism. Across all the analysed nations, HCWs and those in residential care are recommended to receive COVID-19 and influenza vaccination but not PD.

The agile evidence-based medicine approach used during the COVID pandemic could be used to inform current and new vaccine recommendations, including RSV. This could potentially identify additional at-risk populations, who could benefit from vaccination, helping protect them from severe illness and hospitalisation.

Category: Innovation and knowledge mobilisation in IPC

P141

CPE made simple – educational IPC Youtube video to support a hospital outbreak

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Abstract

Carbapenemase producing enterobacterales (CPE) are a recognised and growing threat to our healthcare system. Outbreaks are becoming larger and more frequent. Leeds Teaching Hospitals NHS Trust suffered an outbreak of CPE in a non-specialist, acute medical setting. Initial investigations confirmed that most healthcare staff have limited knowledge of the significance and mode of transmission of CPE. Most material has previously been aimed at doctors and nurses, while ignoring the learning needs of other allied healthcare professionals that come in contact with patients or their environments. Text based guidelines are long and find limited engagement with ward based staff.

We thus developed an easy-to-understand 7 minute Youtube video for anyone that works in our healthcare settings, regardless of their healthcare background. With support from senior leadership, we engaged a multiprofessional workforce of doctors, nurses, infection prevention specialists, pharmacists, biomedical scientists and lay people to review and contribute to the content. The focus is to understand the natural habitat of these organisms in our body and hospital environment, the mode of transmission and how to break the transmission chain. We developed computer animations and physical demonstrations to impart core knowledge. This innovative IPC intervention has been shared trust wide and with the community IPC team, can be accessed at any time and can be targeted at units that suffer outbreaks in the future.

Youtube link: <https://www.youtube.com/watch?v=pZULIB2cwBE>

P142

Measured Reduction in Microbial Total Viable Counts by Air Filtration System Across Multiple Sites in a Large Teaching Hospital Setting.

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Abstract

Introduction:

The built environment is a potential risk factor for the transmission of pathogens. It is important to have control measures in place to reduce these risks. This study investigates the deployment of air purification devices into different clinical settings within a large hospital to reduce airborne pathogens.

Methods:

Clinical areas in Ninewells Hospital, Dundee utilised by clinical staff and patients were chosen. These included a Dermatology outpatient treatment area; Ophthalmology clinic; and an Ear, Nose and Throat ward – which also supports breast, oral and maxillofacial surgery. Air quality samples were obtained monthly: before, during and after deployment of the air filtration devices. Air quality parameters were measured including total viable count (TVC) for bacteria and for fungi and moulds. These parameters were compared to assess the impact of the air filtration devices upon air quality. Air samples for mould and bacteria were collected using an Anderson biostage sampler with 100 litres of ambient air drawn across each agar plate.

Results:

Stand-alone “G350” (Genano®, Finland) air purifying devices were operational for approximately 20 weeks in two clinical areas and for 15 weeks in another clinical area. This resulted in a total viable bacterial count reduction of 62% on average from baseline. Total viable yeast and mould counts were reduced on average by 82%.

Discussion:

The installation of an ionisation air filtration system was shown to significantly reduce levels of airborne microbes in the clinical areas of a hospital. A reduction in airborne microbes has the potential to reduce nosocomial transmission.

P143

Routine whole-genome sequencing reveals potential undetected healthcare transmissions: results of a preclinical study

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Abstract

Introduction

Whilst the application of routine whole-genome sequencing (WGS) to support infection prevention and control (IPC) in healthcare has been evaluated in research settings, translational studies required to understand clinical application and implications are lacking. We describe results of a preclinical study applying routine bacterial WGS to standard care which reveal multiple putative undetected transmissions of healthcare pathogens.

Methods

Routinely collected *S.aureus*, *E.coli*, *K.pneumoniae*, *P.aeruginosa* isolates, retrieved from a microbiology laboratory serving a large teaching and district general hospital on the South Coast of England, underwent WGS. Basic anonymised meta-data were retrieved. Genomic relatedness and cluster identification was determined using Genpax Ltd technology. Clusters were pragmatically defined as isolates differing by ≤ 20 single nucleotide variants.

Results

Between January-July 2023 663 isolates were retrieved and underwent WGS (380 *S.aureus*, 141 *E.coli*, 42 *K.pneumoniae*, 100 *P.aeruginosa*). Of 48 clusters identified, 36 included isolates originating from the same patient revealing within-host organism diversity. The remaining 12 clusters (7 *S. aureus*, 2 *E. coli*, 3 *P. aeruginosa*) each involved isolates from 2 different patients. 8 clusters included samples from sterile sites (3 blood cultures and 5 tissue samples). None of these clusters were identified by routine clinical practice.

Conclusion

WGS of routinely collected bacterial isolates reveals genomically similar isolates from different patients lacking known epidemiological relationships. Furthermore, two thirds of clusters involved samples from sterile sites. Whilst a common community source is plausible, the possibility of undetected hospital transmissions remains concerning. Further work is needed to establish clinical relevance and IPC implications.

Category: Outbreaks

P144

An outbreak due to *Klebsiella pneumoniae* ESBLA in a transplant surgical unit at Oslo University Hospital

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Abstract

Background

The surgical transplant unit in Oslo University Hospital experienced an outbreak with *Klebsiella Pneumoniae* ESBLA ST307 from 2019 to early 2021.

Population of the study and method

The population were all patients admitted to the ward during a defined period. The outbreak was described epidemiologically, and a case control study was conducted to search for risk factors for colonization of *K. Pneumoniae* ST307.

Result

The outbreak strain was identified in a total of 61 patients. 36,1 % of the positive patients were women. The average age of the case population was 58,8 (years). 75,4 % of the patients had undergone a kidney transplant.

The incidence for clinical isolates at the ward was 0,92 per 1000 bed days in the outbreak period compared to 0,55 in a comparable period previous to the outbreak.

The only significant risk factor to increase the risk of contracting *K. Pneumoniae* was patients that had underwent renal transplantation.

Conclusion

This study describes one of the largest outbreaks of KP ST307 in Norway, and to our knowledge the first among solid organ transplant patients. Kidney transplant recipients seemed to be the only significant risk factor. The development in the outbreak points towards a continuous, or alternatively, intermittent source.

Implications

There are few studies on colonization and infection of solid organ transplants with *K. pneumoniae* ESBL during outbreaks. This result emphasizes the necessity of more studies, infection control guidelines and close cooperation with the Department of Microbiology preferably with the possibility of whole genome sequencing and evolutionary analysis.

P145

VIM-producing *Pseudomonas aeruginosa* back at the ICU despite implementation of sink drain disinfection devices 10 years ago

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Abstract

A VIM-producing *Pseudomonas aeruginosa* (MDR-PA) outbreak has previously been described within the ICU of our institute. In addition, we reported reduction in incidence and colonization with MDR-PA in ICU patients and sink drains after placement of sink drain disinfection devices (SDDD). Recently, despite SDDD, three ICU patients tested positive for MDR-PA.

We aimed to unravel why ICU patients tested positive for MDR-PA ten years after placement of SDDD and if this was related to the previous outbreak.

Infection control experts audited the ICU's daily procedures on hygiene measures. Additionally, environmental swabs were taken from all 58 sink drains from patient rooms, utility rooms and toilet facilities for employees. To confirm genotypic and epidemiological relatedness, cgMLST was performed on current sink strain and patients' strains and the previous outbreak strain. All SDDD in the ICU were tested for proper functioning.

Five sink drains of patient rooms and one sink drain of a utility room tested positive for MDR-PA. cgMLST confirmed relatedness between the current and previous outbreak strain. Upon inspection of the entire ICU, 19 of 58 installed SDDD did not longer function properly. Two sink drains of malfunctioning SDDD tested positive for MDR-PA. In total, six sinks tested positive for MDR-PA of which two SDDD were not functioning.

We conclude that SDDD are only partially effective, probably by load reduction. Additional hygiene measures remain necessary to prevent transmission from sinks. It remains unclear whether transmission events were due to a persistent source or new introduction of MDR-PA.

P146

Transfers, teams, and tools – a multiclonal *Enterobacter cloacae* outbreak in a neonatal intensive care unit

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Abstract

Introduction

Neonatal intensive care units (NICU) pose challenges to infection-prevention teams. Complex care needs, frequent device use and high patient turnover contribute to the risk of pathogen transmission. *Enterobacter cloacae* has been implicated as a frequent cause of NICU outbreaks.

Outbreak

In our regional NICU AmpC-producing *E. cloacae* isolates were identified on rectal screens primarily intended to detect ESBLs. Colonisation was detected in 25 neonates over 27 months. 23 were further characterised by whole genome sequencing (WGS), and sequence types assigned using PubMLST.

Two clonal clusters were identified. The first involved four infants, with colonisation identified over a three-month period. The second involved five infants, with colonisation identified over an eleven-month period. Both clusters first involved infants who had been transferred from (different) external hospitals, followed by probable local transmission. One infant had invasive *E. cloacae* infection.

Epidemiological links were reviewed, environmental screening of associated incubators performed and outbreak control meetings convened. Empiric therapy for late-onset sepsis was revised. In both clusters, local transmission occurred at a time of high unit activity. There were staffing challenges related to the occurrence of the outbreaks, in particular in relation to temporary absences of staff specifically trained in dismantling and cleaning of incubators.

Discussion

Neonates may be transferred between several NICUs during their care journey. Screening focused exclusively on specific entities such as ESBL-producing Enterobacterales may miss chains of transmission of other MDRO organisms. WGS was essential in differentiating these chains of transmission from sporadic isolates and brought a sharp focus on staffing challenges.

P147

Title: Nosocomial Varicella Zoster Virus outbreak in a long term care unit in a tertiary care teaching hospital in Northern India

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Abstract

Introduction:

Nosocomial outbreak of Varicella Zoster Virus (VZV) has been reported and containment of the outbreak depends on isolation of suspected cases and increasing the immunized population in these settings.

Material and Methods:

Hospital Infection control team investigated a suspected VZV outbreak in a 50-bedded in-patient facility of Physical medicine and rehabilitation (PMR) Epidemiological investigation included developing a case definition, line listing of cases and contact tracing. Eight cases were identified .Cohorting and isolation of patients, contact and airborne precautions and vaccination of susceptible HCWs were implemented.

Results:

A patient admitted with Pott's spine complained of fever and rash and was clinically diagnosed with chicken pox on 31st December 2022. In the following week, four more cases were identified . All cases were diagnosed as laboratory confirmed VZV infection by PCR. On interviewing the HCWs, index case was i a housekeeping staff clinically diagnosed as chicken pox three weeks prior. He returned to work on the eighth day of infection after apparent clinical recovery. Contacts were 31 HCWs and tested for VZV IgG and four HCW had no evidence of immunity. Two-dose VZV immunization of susceptible HCW was initiated. Two susceptible HCWs developed chickenpox after first dose of vaccination. All cases recovered after treatment with no Complications. No further cases were reported after 42 days monitoring.

Conclusion:

VZV infection is highly contagious in healthcare settings with susceptible populations. Prompt identification of cases and implementation of infection prevention and control measures like patient isolation and vaccination are essential for containment

Category: Outpatient Antibiotic Therapy

P148

Ceftriaxone dosing and infusion time: experience in Forth Valley OPAT

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Abstract

The European Committee on Antimicrobial Susceptibility Testing (EUCAST) breakpoint for Methicillin Susceptible Staphylococcus Aureus (MSSA) now recommend 4g per day dosing in place of the standard 2g day⁻¹ (1). The Scottish Antimicrobial Prescribing Group (SAPG) released guidance in February 2023 advising that 4g of ceftriaxone should be administered over 1 hour (2).

At the Forth Valley Royal Hospital (FVRH) Outpatient Parenteral Antimicrobial Therapy (OPAT) service, our current practice is to administer 4g of ceftriaxone over 30 minutes. Following the SAPG guidelines would limit the number of patients OPAT could treat.

We wanted to know if giving 4g of ceftriaxone over 30 minutes is associated with higher odds of adverse effects or re-occurrence of infection.

We compared odds of developing a new episode of thrombocytopenia, neutropenia, deranged liver function function (LFT) 3X the upper limit of normal, rash and diarrhoea whilst taking ceftriaxone.

We compared a cohort of 88 OPAT patients receiving 4g ceftriaxone over 30 minutes with 88 OPAT patients receiving 2g over 30 minutes. Whilst the groups were broadly similar in terms of age, sex and underlying source of infection, the difference in median duration of treatment was statistically significant, with those on 4g receiving a longer course (13 days vs. 21 days; p=0.02).

Whilst there were higher odds of side effects and treatment failure in the 4g group, the difference was not statistically significant; OR 11.7 (0.6-214.1) p-value 0.1; corrected to 5.18 (0.61, 44.29) p-value 0.1 once we stratified by time on treatment with pooled OR.

P149

OPAT service in a Neurosurgical Specialist Trust - a review of AMS and management improvements in the last 4 years

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Abstract

The Walton Centre is a Specialist Hospital providing Neurology and Neurosurgical services to a large geographical area. The OPAT team comprises of a Specialist Spinal Nurse, AMS Pharmacist, Consultant Neurosurgeon and Consultant Medical Microbiologist and treats spinal and brain infections. Spinal infections can range from simple discitis to multi-level complex metal work infections.

Since the OPAT team and MDT commenced in April 2019 we have treated over x number of patients through the OPAT clinic. During this time we have improved antimicrobial stewardship and treatment pathways for patients.

We have reduced the duration of antibiotics to 6 weeks (from 6 weeks IV and 6 weeks PO antibiotics) for all infected spinal metalwork after a trial period in 2019 of run off bloods and follow up. There have only been 2 treatment failures with this plan in the last 4 years. All cases are now considered for oral antibiotics early on in treatment. We have also stopped routine MRI scans at 6 weeks for all spinal infections, saving this resource for when it is indicated clinically. The OPAT team have now produced a Spinal Infection Management Pathway for denovo infections and surgical site infections to further improve investigation and treatment of such infections. This is primarily to ensure samples are taken prior to antibiotics when safe and appropriate to do so.

The OPAT clinic at Walton has now been running for 4 years and it has made real improvements in the management of neurosurgical infections.

P150

Evolution of antimicrobial resistance (AMR) in patients receiving Outpatient Parenteral Antimicrobial Therapy (OPAT)

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Abstract

Introduction: The use of intravenous broad-spectrum antimicrobials in the community has increased with the expansion of the Outpatient Parenteral Antimicrobial Therapy (OPAT) service. Once-daily intravenous antimicrobials at home facilitate early discharge from hospital but can be a driver in antimicrobial resistance (AMR) development.

Method: This prospective cohort study quantified carriage of gut bacteria, associated with AMR, in OPAT patients at Addenbrooke's hospital, Cambridge. 10 healthy controls and 20 patients (receiving 2 weeks of ceftriaxone/daptomycin) provided stool samples at enrolment, weekly throughout treatment and at 3 months.

We isolated bacteria with AMR from stool samples, using differential, chromogenic agar and confirmed identification (MALDI-TOF) and antimicrobial susceptibility (disc and VITEK platform.) We examined the gram-negative bacteria in samples over time, to compare changes in Minimum Inhibitory Concentration (agar dilution method, EUCAST breakpoints) for ceftriaxone, ciprofloxacin and gentamicin.

Results: 90% of ceftriaxone-receiving patients, 30% of daptomycin-receiving patients and 10% of healthy controls carried gram-negative antibiotic-resistant gut bacteria during the study, including 20% of patients at 3 months post-antimicrobial therapy. Cultured resistant bacteria included *Escherichia coli* (AmpC and ESBL producing,) *Enterobacter cloacae*, *Citrobacter freundii*, *Citrobacter amalonaticus*, *Pseudomonas aeruginosa*, *Aeromonas veronii* and *Klebsiella pneumoniae* (AmpC producing.) 70% of patients carried vancomycin-resistant *Enterococcus faecium* during the study and 15% at 3 months post-antimicrobial therapy.

Discussion: The risk of carrying gut bacteria with AMR is higher in OPAT patients compared to the general population. Broad-spectrum OPAT options are not without potential risk: Alternatives include narrow-spectrum intravenous inpatient and oral options.

P151

Use of dalbavancin in an NHS university teaching hospital

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Abstract

Background

Dalbavancin is a lipoglycopeptide antibiotic, active against Gram positive bacteria, with a long elimination half-life (9-14 days). Once-weekly or one-off dosing of an effective antimicrobial may be advantageous in challenging therapeutic scenarios for selected groups. This study aimed to characterise the use of dalbavancin in an NHS university hospital.

Methods

Demographic and clinical data over a 1½-year period was retrospectively collected for all patients prescribed dalbavancin at our NHS Trust. A total of 36 patients were returned; 1 patient was excluded (dalbavancin never administered).

Results

The 35 patients comprised 18 (62.1%) males and 17 (58.6%) females, with ages ranging from 33 to 91 years (mean = 59.4 years). The majority of patients (n=24, 68.6%) had cellulitis, followed by endocarditis (n=4, 11.4%). Bacteraemia was present in 10 (28.6%) patients.

Loss of or difficult intravenous access was the indication for dalbavancin in 15 (42.9%) patients; 4 (11.4%) were actively self-discharging or had poor medication concordance documented. Intravenous drug misuse was prevalent in 11 (31.4%) of patients.

Some 24 (68.6%) patients were overweight or obese according to UK criteria. Further antibiotics were required for 12 patients (34.3%); 6 (17.1%) were re-admitted with the same condition. There was no significant difference in readmission rates stratified by BMI (χ^2 , p=0.9121).

Conclusions

Dalbavancin proved a useful aid to management in a variety of situations. This data characterises use of dalbavancin in our NHS Trust. Further work is needed to confirm failure rates, and to identify whether additional follow-up or prescribing criteria are required.

Category: Quality improvement

P152

An audit of compliance of clindamycin dosing in obese patients at University Hospitals of Birmingham (UHB). Nirlep Agravedi (Pharmacist), Dr Abi Jenkins (Pharmacist), Charlotte Alsop (Pharmacy Technician)

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Abstract

Introduction:

Clindamycin is an antibiotic commonly used to treat skin and soft tissue infection (SSTI) in penicillin allergic patients.

Due to physiological changes observed in obesity including delay in absorption in subcutaneous tissue higher clindamycin doses are needed in patients with a body mass index (BMI) > 30 kg/m².

A retrospective audit and notes review was conducted between November 2022 and March 2023 to document clindamycin dosing adherence in patients with a BMI 30 kg/m²

Audit standards:

100% of patients are prescribed a clindamycin dose appropriate to their BMI.

SSTI Guidelines:

BMI < 30 kg/m² 450mg four times a day

BMI > 30 kg/m² 600mg four times a day

Method:

A report was extracted from the Electronic Prescribing System. A data collection tool kit generated to record the sample of patients.

Results:

Of 102 review patients 46% (n=47) had a BMI > 30kg/m² whilst 54% (n=55) had a BMI <30kg/m²

In obese patients, guideline adherence was 45 % whilst in non-obese patients, compliance was 55%.

Conclusions:

The audited period and data showed the compliance to clindamycin dosing guidance was inadequate. To improve the audit standard, an increased focus on the pharmacist's stewardship training and education will be essential. Additionally, further education can be provided in the junior doctors monthly forum to raise the awareness.

Future development:

To develop an automated weight- based template which can then prompt a correct dose based on the patient recorded weight and BMI at the point of prescribing clindamycin.

P153

A Multidisciplinary Team Approach to Haematology Patients with Infection to Improve Antimicrobial Stewardship at Royal Oldham Hospital

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Abstract

Background, Aims and Methods:

Haematology patients often have complex infection-related issues and effective infection management requires an MDT approach. Microbiology advice for haematology inpatients at Royal Oldham Hospital is usually provided via a telephone consult. We wanted to improve the quality of infection-related care and antimicrobial stewardship provided to haematology inpatients by proposing an intervention of weekly haematology MDT meeting or face-to-face discussion. We collected data on antibiotic usage (for piperacillin-tazobactam, vancomycin and meropenem) and call volume for haematology patients before and after intervention to measure change.

Results:

Combined antibiotic duration for these three antibiotics reduced by 33.97% per month (from 6260.2 hours to 4135.5 hours) with our intervention. Individually the durations for meropenem and vancomycin decreased by 39.66% and 57.61% respectively, whereas piperacillin-tazobactam duration stayed the same. There was also a reduction in call volume on the advice line which dropped by 78% as most of the patients were discussed in MDT meeting.

Discussion:

Our QIP demonstrates that a weekly haematology round by microbiology team can improve antimicrobial stewardship. By discussing complex cases in an MDT setting, the microbiology team can provide recommendations for the appropriate use of antimicrobials based on the patient's clinical condition and microbiological data, reducing unnecessary use of broad-spectrum antimicrobials. The MDT ensures that complex patients are discussed appropriately. The intervention has also been shown to sustainably reduce call volume, and the approach has been well-received by the haematology team.

P154

Culture Shock: Improving the Blood Culture Pathway using Quality Improvement Methodology

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Abstract

Improving the quality of blood culture samples is vital to improve outcomes from sepsis and helps support better antimicrobial stewardship. NHS England has recently published an initiative 'Improving the Blood Culture Pathway', one part of which aims to improve adherence to existing microbiology standards.

We present our timely Quality Improvement Project about optimisation of the 'Blood Culture Pathway' in the Emergency Department of North Middlesex University Hospital, London, where we audited the standards volume of blood per sample and time to analyser.

Baseline data (Dec 2022) showed that 4/67 (6%) of BC samples contained the manufacturer's target range of 8ml to 10ml and the median volume was 4ml (IQR 2-5ml) and 79/343 (23%) of BC samples were incubated within 4 hours of collection.

In response to these results, we provided dedicated educational sessions, developed posters, and worked with senior nurses to ensure the key messages were communicated during the nurses' 'huddle' before each shift during March 2023. The messages were summarised thus: ACTS to improve blood cultures: Aseptic non touch technique, Collect 8-10ml, Timing - ensure the timing of the collection is correct, Send promptly.

A re-audit in June 2023 showed 14/36 (39%) of BC samples contained 8ml to 10ml and the median volume was 7ml (IQR 5-9ml), 121/130 (93%) of BC samples were incubated within 4 hours of collection.

We offer learning points from implementing the NHSE 'Improving the Blood Culture Pathway' initiative and discussion about utilising in-analyser estimates of blood culture volume for routine monitoring.

P155

A quality improvement project on investigation and management of *Staphylococcus aureus* bacteraemia

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Abstract

Introduction:

Staphylococcus aureus bacteraemia is a severe infection with a mortality of over 20%. It is vital that patients are investigated for deep seated or seeded infection, and that appropriate antibiotic therapy is employed.

Methods:

Patients with *S. aureus* bacteraemia were identified from a prospectively kept database of positive blood culture results in Wexham Park Hospital, Slough, UK. A four-month audit of practice against Royal College of Pathology Guidance was performed before and after implementation of an electronic proforma providing guidance to clinicians, with a focus on gathering data on blood culture collection, echocardiography, and administration of effective antibiotics for appropriate duration.

Results:

Baseline data and reaudit data were gathered on 18 and 21 patients respectively. The audit groups had similar ages (mean age 61 years at baseline, 62 at reaudit), and proportion of male patients (67% in both audit groups). Collection of at least three blood cultures increased from 61 to 67% in the reaudit. Echocardiography within 24 hours increased from 11 to 24% (echocardiography during patient admissions increasing 61 to 81%). Administration of at least 2 weeks of appropriate antibiotics increased from 39 to 67%. There was no significant change in patient outcomes.

Conclusions:

Our quality improvement project demonstrated how an electronic proforma could increase the compliance with numbers of blood cultures, performing echocardiography and appropriate antibiotic duration in our centre. This study would, however, benefit from analysis of greater patient numbers to determine if use of this proforma might lead to changes in patient outcome.

P156

Rationalising Antibiotic Use for Prevention of Early Onset Sepsis in Neonates

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Abstract

Background

Many babies are started on intravenous antibiotics for early onset neonatal sepsis. Only a limited number of babies will have this diagnosis confirmed however. This quality improvement project aimed to reduce the number of babies being started on antibiotics for early onset sepsis in the Queen Elizabeth University Hospital, Glasgow.

Methods

The West of Scotland guidelines were updated in October 2022 to align with the NICE guidelines. This meant antibiotics were no longer automatically indicated in babies whose mother had intrapartum fever. Data on antibiotic use on the postnatal wards was retrospectively collected for 2 months pre-change (August and September 2022) and 2 months post-change (January and February 2023). Data on neonates re-admitted with positive blood cultures was analysed over an 11-month period.

Results

The average number of babies being started on intravenous antibiotics per day decreased from 1.4 to 0.9. The number of days in which a baby received 1 or more dose of intravenous antibiotics decreased from 206 in the 2 months pre-change to 142 days in the 2 months post-change. This equated to an approximate saving of £74,000 over this period on maternity beds. During 6 months analysed post-change, there were no babies less than 7 days old re-admitted in the health board with positive blood culture results which could have been prevented had the change in guidelines not been made.

Conclusion

Since this change to local guidelines there are fewer babies being started on intravenous antibiotics with no adverse impact from this intervention identified.

P157

Improving Diagnosis and Management of Spontaneous Bacterial Peritonitis

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Abstract

Spontaneous bacterial peritonitis (SBP) is a bacterial infection of the ascitic fluid without any intra-abdominal surgical sources. It has high rates of mortality, although they can be decreased with prompt diagnosis and treatment. To manage incidences of SBP effectively this audit was conducted to compare practice against national standards. According to guidance, initial diagnosis of SBP is based on diagnostic paracentesis and subsequent microscopy results, a neutrophil count of $>250/\text{mm}^3$ is strongly indicative of SBP. Ascitic fluid blood culture bottles are recommended to increase yield and to further guide treatment if culture positive. Samples should be taken before antimicrobial therapy is started, however, empiric antibiotic therapy should be started immediately after this.

Only patients who were treated as suspected or confirmed SBP were included in the audit. Time of sampling and receipt in the laboratory were recorded, as were the type of specimen containers received and what time antibiotics were started. Of the 59 patient samples audited, 1% of samples were sent in both blood culture bottles and a universal for microscopy as per guidance. 29% of samples were delayed in being received by Microbiology and 3% were in unsuitable containers for analysis. Following audit, remedial measures will be put in place to improve these statistics, pathology SBP kits will now be available to wards containing correct containers for samples. Further changes to the electronic prescribing and medicines administration system to print labels for correct containers when ordering the sample are in discussion.

P158

**A complete audit cycle of Staphylococcus aureus bloodstream infection.
Improvements in care can still be found.**

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Abstract

Introduction: Staphylococcus aureus blood stream infection (SAU BSI) is a serious systemic bacterial infection with an annual incidence of approximately 20/100 000 population. SAU BSI typically results in prolonged hospital admission and a 30-day mortality rate of approximately 20%.

We conducted a baseline audit, implemented change and reaudited during a 2 year cycle. The audit assessed adherence to five Quality-of-Care Indicators. These included (1) follow-up blood cultures; (2) early source control where applicable; (3) echocardiography; (4) the appropriate duration of therapy and (5) bedside infection doctor consultation.

Methods: 44 patients with SAU BSI were identified between January-June 2021 and 53 patients between March-August 2022.

Results: Following the baseline audit, changes in practice included the introduction of a bedside infection consultation, infection team defining whether the infection was complicated or not and a recommended treatment duration. Bedside infection doctor consultation increased from 0% to 62.3 %. Follow-up blood cultures increased from 81.4% to 93%; early source control improved from 57.9% to 88.2%; minimum 2 weeks of treatment duration increased from 92% to 100% in uncomplicated cases, and minimum 4 weeks of treatment duration increased from 30% to 70% in complicated cases. 30-day mortality decreased from 27.3% to 22.8%.

Conclusion: Following the introduction of bedside infection doctor consultation, an overall improvement was seen in adherence to QCI and patient outcomes.

P159

Rapid CSF multiplex testing has minimal impact on length of stay and aciclovir use: a case for integrated stewardship policies.

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Abstract

Syndromic multiplex panels for meningitis / encephalitis pathogens are now increasingly used as rapid diagnostic methods to expedite early diagnosis and rationalise empiric therapy.

In this retrospective single-site study we studied test turnaround time, patient length of stay and total aciclovir usage in paediatric patients having CSF specimens tested by either traditional PCR method or by Biofire ME syndromic panel which was introduced without a testing policy or associated clinical guidance.

The two different assays were performed during September 2019 – March 2021 (traditional PCR, n=180) and September 2021 – March 2023 (Biofire ME, n=194) provided at different reference sites. Patients were aged 2 days – 15 years across both groups.

Significant improvements in turnaround time were observed with Biofire ME. However, in contrast to some previous studies, no significant decrease in length of stay was seen despite rapid results. The impact of rapid testing did not result in noticeable reductions in mean overall aciclovir doses per patient between traditional PCR study periods (8.1 doses), Biofire ME (7.3 doses) although a more detailed analysis was prevented by the lack of electronic prescribing records.

The study highlights that rapid syndromic testing alone without an agreed policy for diagnostic use and de-escalation may not enable early discharge or rationalisation of treatments. Potential for appropriate and cost-effective use of syndromic CSF panels exist within an agreed diagnostic and antimicrobial policy.

P160

A qualitative audit on the prophylaxis use of antibiotics in open fracture at Queen Elizabeth Hospital, University Hospitals of Birmingham.

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Abstract

Background:

During the antimicrobial stewardship ward rounds it was noted that prophylaxis use of the antimicrobial was non-compliance. The recommendation of use prophylaxis of intravenous (IV) antibiotics is a maximum of three days or 72 hours.

Aim:

A qualitative analysis to see adherence to the antimicrobial guidelines in trauma and orthopaedic and major trauma services.

Objective:

To establish the appropriateness of prophylactic antimicrobial prescribing while treating open fractures.

Audit standards:

100% of non- penicillin allergic patients prescribed Co-amoxiclav IV 1.2g three times a day.

100% of penicillin allergic patients prescribed Clindamycin 600mg IV four times a day.

100% of patients prescribed appropriate duration of antibiotic.

100% of patients started of prophylactic antibiotic within the time frame.

Method:

In house electronic prescribing system was utilised to identify the 39 open fractures patients between October 2022 and March 2023. A data collection tool was developed to record patient's identifiable information.

Results:

95% of patients were commenced on IV antibiotics on the day of admission whilst 5% were not prescribed prophylactic antibiotics.

100% of patients were compliant with the choice of the antibiotics.

43% of patients (n=15) exceeded the recommended duration of 3 days to 5 days.

Conclusion:

Prophylactic antibiotics for open fractures are prescribed appropriately when considering the parameters of antibiotic choice, dose, and route. However, the duration of the prescription often exceeds the maximum 72 hours.

Future development:

Restrict the default settings of prophylaxis antibiotics in trauma and orthopaedic units to a maximum of 72 hours.

P161

Gentamicin labels: Improving the timing of gentamicin levels and reducing delay in dose administrations

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Abstract

Introduction:

Despite readily available guidelines, Gentamicin continues to be associated with errors such as incorrectly prescribed doses/frequencies, missed levels and delayed/omitted doses.

In response to this, a baseline audit was undertaken to investigate errors in gentamicin use within Acute Medical Unit (AMU) at Royal Infirmary of Edinburgh (RIE) and evaluate the barriers to adherence to guidelines to unearth possible areas for improvement.

Methods:

The initial audit studied 31 patients prescribed gentamicin in AMU within a three-week period, examining the following parameters both on their paper charts and HEPMA: dose, dosing interval/frequency, time of level sampling, and administration times of gentamicin doses. After identifying issues with delayed gentamicin levels and subsequent dose administration times, we introduced the use of gentamicin labels, in hopes of increasing staff awareness towards patients on gentamicin, thereby promoting timely level sampling and dose administration. The parameters were re-audited for a further three weeks following this intervention.

Results:

The baseline audit highlighted that only 74% patients had levels taken within the recommended window and received their second gentamicin doses at the right interval. The re-audit observed a slight improvement following our intervention, with 78% patients who had levels taken on time, and 75% patients receiving subsequent doses at the right interval. Noteworthy, the majority of those who had delayed second doses, both pre- and post-intervention, received their first doses in A&E.

Conclusion:

In addition to improving awareness, further interventions should target on improving the handover of time-critical medicines between A&E and AMU.

P162

A quality improvement project investigating medicines-related predisposing factors for relapsed *Clostridioides Difficile* in patients being treated with fidaxomicin

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Abstract

Background:

This quality improvement project (QIP) conducted at Queen Elizabeth Hospital Birmingham evaluated patients treated with fidaxomicin for treatment-resistant *Clostridioides Difficile* colitis (CDC) in January 2021. The aim was to investigate medicines-related contributing factors for relapsed CDC in order to reduce rates of diagnosis, hence minimising medicine intervention.

QIP Measures:

1. Identification of 30 patients treated with fidaxomicin for relapsed CDC in January 2021.
2. Collate a medication history from 28 days prior to CDC positive result.
3. Identification of medicines-related predisposing factors (PPIs, antibiotics, laxatives and magnesium supplements) and whether they were paused/stopped on inpatient chart within 72 hours of diagnosis.

Results:

- 73% of patients were taking proton pump inhibitors (PPIs) prior to their CDC positive result.
- Of the 22 patients on PPIs prior to developing CDC, eight patients remained on PPIs after diagnosis.
- 67% of the patients taking antibiotics prior to their positive result were taking an antibiotic likely to increase their risk of developing CDC.

Conclusion:

Improving the management of patients when they are first diagnosed with CDC will ensure effective treatment, but also prevention of recurrent infections.

Recommendations:

Creating an alert on the electronic prescribing system can prompt prescribers to stop laxatives and review PPIs when prescribing fidaxomicin. An assessment checklist can be produced for Infection Control nurses to be carried out when collecting initial culture samples. Producing an SOP for

pharmacists that explains how to review a drug chart for CDC positive patients will ensure medicines optimisation.

P163

Re-imagining electronic infection guidelines – making it easier for clinicians to make the correct choices

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Abstract

The management of infections in healthcare have traditionally been managed by patient-facing clinicians, who make decisions about treatments they feel are most appropriate. While this was a reasonable approach, a number of factors have changed the culture in healthcare, where there is an increasing reliance on Infection specialists to provide advice in the management of infection patients.

This shift in culture as well as the advent of mobile technologies has heralded the use of mobile-based antimicrobial guidelines to provide accessible advice to clinicians. Various applications have become available, however, we felt that none of them offered 1. Clinicians a holistic experience, 2. Innovative ways to improve stewardship, 3. A way to decrease volume of unnecessary calls to infection specialists.

The team at Croydon University Hospital re-imagined the experience for non-infection specialists and developed an application which gives more confidence to the user that they are making the correct choices. The team developed not only an application which focuses on empirical guidance, but made the application tailor guidance to option selection, such as with allergy and nature of allergy.

Bespoke antimicrobial stewardship tools, infection control tools, common questions posed to infection specialists and results interpretation tools were all included in the app. The launch of the app as well with other interventions resulted in a significant decrease in Carbapenem usage bringing the hospital from one of the highest users in the country to an average user. Clinician feedback has been extremely positive and calls made to infection specialists are more appropriate.

Category: Research priorities

P164

Inclusion of different ethnic groups in COVID-19 prevention and treatment trials: An analysis of studies registered on ClinicalTrials.gov

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Abstract

Introduction:

Ethnic minority groups have been disproportionately affected by COVID-19. We performed an analysis to investigate the inclusion of different ethnic groups in COVID-19 prevention and treatment clinical trials.

Methods:

We reviewed all COVID-19 clinical trials registered on the ClinicalTrials.gov website up until 20th April 2023. PROSPERO ID: CRD42023431742

Findings:

Of 8940 studies registered on ClinicalTrials.gov, 1289 were included in the final analysis; 17% (213) from the USA, 2% (25) from the UK; 9% (120) from lower middle income countries.

11% (139) mentioned ethnicity/race in the trial registry. Of the 12% (157) that attached study documents, 69% (109) specified demographic data on ethnicity/race will be collected; 37% (58) specified the effect of ethnicity/race on study results will be analysed.

Only 33% (426) of registered trials were completed, despite the earliest study start date being 21st February 2020 (NCT04280705). 23% (301) shared a link to publication of study results; 9% (117) posted results on the webpage.

Of the studies with posted results, 96% (112) reported ethnicity/race as a baseline characteristic and 3% (4) reported outcomes by ethnicity/race. On average, 66% of participants were from White groups, 14% from Black groups, 5% from Asian groups, 8% from Other ethnic groups, 3% from Mixed ethnic groups and the ethnicity of 4% was Unknown.

Conclusion:

Based on the trials with results, the proportion of ethnic minority groups included in COVID-19 trials was low. Our study highlights the need to include ethnic minority groups within clinical trials from study inception.

P165

Using technology for Transactional & Unprotected Sex posing HIV Risk amongst Commercial App Based Drivers – Evidence from 3 Indian Cities

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Abstract

Recent data from the Integrated Counselling and Testing Centre reveals an increase in HIV positive among local taxi and rickshaw drivers in the varied transportation sector. Therefore, understanding sexual dynamics and HIV/STI risk among commercial short-distance drivers is the goal of this study.

This paper reports findings from 3 cities Delhi, Mumbai & Bangalore; a sub-sample from a pan India study conducted in 9 states, using in-depth interviews and focus group discussions. Purposive and snowball sampling technique was used to identify participants. There were 120 participants interviewed in the selected cities including drivers and their support staff like helpers/cleaners. Additionally, 60 key informant interviews were also conducted with state, district government official and non-official key respondents.

Virtual platforms and software, originally developed for ridesharing services like Uber, Ola, are now frequently used for sexual networking and solicitation, allowing drivers to interact with potential paid non-conventional sexual partners like college-going girls. Short distance drivers believed that these sexual partners were "safer" than commercial sex workers in terms of danger of infection since they engage in less transactional intercourse and don't insist on use of condoms. As a result, drivers & sex workers are more at risk of contracting STIs.

Study findings support need for contextualising strategies to ensure preventive measures for vulnerable groups like short-distance drivers and their paid sexual partners and to tap into these networks, which are highly anonymous, virtual, and restricted to small circles. Definition under the Government's programme and service package would need to be redefined.

P166

Perinatal respiratory human challenge can be acceptable and feasible: a proof-of-concept study

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Abstract

Background: Human challenge studies, involving experimentally-induced infection, can offer a safe and versatile approach to investigating infection pathology, prevention and treatment. Historically, pregnant women and neonates have been excluded from such research, and their involvement raises practical and ethical considerations. The recent Lactamica 9 study was the first ever perinatal respiratory human challenge study, using nasal inoculation with commensal *Neisseria* to study colonisation and microbiome development in twenty-one inoculated women and their neonates. This study offered a unique opportunity to explore participant motivations, concerns and experiences.

Methods: Fully-anonymised questionnaires were administered to all study volunteers pre- and post-participation, using a combination of forced Likert scales, word association and free text questions.

Results: The Lactamica 9 study secured ethical approval from the national Research Ethics Committee and the study Sponsor, and the recruitment target was met, suggesting study acceptability. Pre- and post-participation questionnaires were completed by 87.1% (27/31) and 62.5% (15/24) of eligible participants, respectively. Almost all respondents cited altruistic motivations for participation, and most concerns were related to sampling discomfort, with very few concerned about the theoretical risks of inoculation to themselves (5/27; 18.5%) or their baby (6/27; 22%). Participants most frequently associated the intervention with the terms “bacteria”, “natural”, “protective” and “safe”, and 93.3% (14/15) of post-participation respondents considered all study procedures acceptable.

Conclusions: The Lactamica 9 proof-of-concept study demonstrates that perinatal human challenge research can be both feasible and acceptable. Participant concerns were seemingly outweighed by altruistic motivations and a perception of the intervention as “natural”.

Category: Response to COVID-19 pandemic

P167

Facemask sampling as a clinical tool for the detection of highly infectious healthcare workers with SARS-CoV-2– a report of prospective sampling studies

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Abstract

Introduction

Facemask sampling (FMS) quantifies SARS-CoV-2 from exhaled breath. We aimed to assess the application of FMS as a clinical tool for the detection of infectious healthcare workers (HCWs).

Methods

We first sampled HCWs during acute infection and assessed FMS viral load (VL) to probability of transmission to household contacts. We then assessed whether pre-existing immunity of HCWs was related to FMS VL during subsequent breakthrough infection. Finally, we screened HCWs with FMS at work, to detect asymptomatic viral emissions. We issued questionnaires to assess feasibility of FMS amongst these participants. Samples were analysed by RT-qPCR from sampling matrix strips within a duckbilled facemask.

Results

In 2021, analysis of 203 FMS from 34 participants showed that frequency of household transmission was associated with the highest FMS VL obtained (age adjusted OR of household transmission per logarithmic increase in copies/strip: 4.97, 95%CI:1.20-20.55, p=0.02). In 2022, analysis of 64 FMS from 16 participants showed that anti-spike antibody levels taken prior to receipt of the third vaccine negatively predicted FMS VL during subsequent infection (age and vaccine adjusted beta-coefficient:-1.58, 98% CI:-3.02 to -0.14, p=0.04). For both cohorts, no such relationships was found from concomitant nasopharyngeal samples. In 2023, 202 FMS was collected from 188 patient-facing HCWs; 4 was positive for SARS-CoV-2, whilst routinely at work. 135 participants completed the questionnaire; 97% indicated willingness to provide FMS longitudinally during outbreaks.

Conclusion

FMS is associated with different markers of infectivity and can be applied within routine healthcare settings to detect asymptomatic/early viral emissions.

P168

COVID-19: Knowledge, attitude, and practice of Infection Prevention and Control amongst healthcare workers in Lagos University Teaching Hospital

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Abstract

The WHO declared COVID-19 a pandemic in 2020. Nigeria had IPC guidelines before the pandemic however our healthcare systems were tested. In Africa, 30% of patients admitted to hospitals contract nosocomial infections. The aim of this study was to assess the knowledge, attitude, and practice of IPC by healthcare workers in LUTH since COVID-19, and to identify the peculiar challenges they face in their IPC practice.

401 healthcare workers participated in this study. It was a descriptive study that used a self-administered questionnaire to collect data. Data were then analyzed using Epi Info™ version 7. Association between non-numerical variables was considered statistically significant if the p-value was less than 0.05.

In this study, the mean age of the respondents was 35.43±6.90. Most of the respondents were female (74.6%), married (72.3%), Christian (71.3%), had a career length of 1-10 years (88.0%), and were doctors (39.9%) and nurses (47.1%). About two-thirds (67%) of the respondents had a negative attitude toward the effectiveness of IPC. A similar number (61.3%) had a good level of IPC knowledge and the greater population (69.6%) of the respondents had good IPC practice. The healthcare workers reported IPC training frequency, availability of sufficient water, and the number of equipped hand hygiene stations as challenges to their IPC practice.

IPC training should be more regular and healthcare workers assessed for their IPC knowledge, practice, and the challenges they face. Further research can be carried out to evaluate real-time IPC practice for a more objective assessment.

P169

Covid Medicines Delivery Unit (CMDU): One-year service evaluation.

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Abstract

Background

CMDUs were implemented to treat high-risk individuals with COVID-19 infection with the aim to reduce hospitalisation. The Greater Manchester CMDU serves a population across ten boroughs. We aimed to evaluate the characteristics of patients treated, and subsequent hospitalisation rates for patients who reside in the Manchester borough.

Method

We identified all referrals to our CMDU over a one-year period from December 2021 to December 2022 from our database. Using the CMDU database and hospitals records, we compiled a dataset including demographic details, COVID treatment status and all-cause unplanned hospital admission within 30 days for all treated patients.

Results

1247 referrals for high-risk individuals were identified in the evaluation period. Of the 255 patients treated, median age was 51 years (range 12-92), 63% (n=161) were female, and 62% (n=98) had an immune-mediated inflammatory disorder (IMID). Hospitalisation rate at 30-days post treatment, in all treatment groups, was 6.7% (17/255), with one death. Of the patients who received nirmatrelvir/ritonavir 11/115 (9.6%) were hospitalised, followed by 4/64 (6.3%) who received molnupiravir, 2/72 (2.8%) who received sotrovimab and 1/4 (25%) who received remdesivir.

Conclusion

Our real-world cohort of individuals treated by the CMDU were predominately women, with IMID. Sotrovimab and molnupiravir demonstrated lower rates of all-cause hospitalisation compared to their respective licensing studies. Rates for nirmatrelvir/ritonavir were comparable to published data. This evaluation is limited by the accessibility of hospital admission information outside the local Trust. severity of illness is also related to the circulating variant and time since last covid vaccine

Category: Surgical site infections

P170

Markers of Poor Outcome after Revision Surgery for Surgical Site Infection of Primary Craniotomy, Craniectomy and Cranioplasty.

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Abstract

Background – The evidence base for the management of post-surgical skull infections is sparse. Consensus statements provide broad antibiotic durations, however indications to prolong therapy are poorly defined.

Methods – We retrospectively reviewed patients requiring revision surgery for surgical site infection (SSI) following primary craniotomy, craniectomy and cranioplasty. Data included: demographics, medical history, immunological status, haematology/biochemistry, operative findings, microbiology, and antibiotic management. Adverse outcome was defined as a ‘return to theatre’ for recurrence of SSI or death within 1-year.

Results – Between 01 January 2019 and 01 April 2022, 94 patients required operations for SSI. 44% were male (median age; 51 years [IQR: 42-63]). Intra-operatively, 40% of infections were determined to involve superficial structures, 33% involved graft site/deeper structures but remained extradural, 27% extended to the subdural space.

S.aureus (24%) and *C.acnes* (22%) and were the most frequently identified. We found a high frequency of Gram-negative organisms (26%). Longer durations of antibiotics were prescribed for infections extending sub-durally than those involving superficial structures only (42 days [IQR:28-49] v 14 days [IQR:8-28]). However, a similar proportion of each group required repeat infection surgery (26% v 32%). On univariate analysis steroid use (HR 2.90 (1.33-6.29) $p<0.007$) and increasing days of antibiotic (HR 1.03 (1.01-1.04) $p<0.001$) were associated with the composite for adverse outcome.

Conclusions – A significant proportion of patients with superficial surgical site infection had treatment failure. Steroid use at the time of infection surgery increased risk of a poor outcome. Pooling experience between centres is needed to optimise surgical and antimicrobial therapy.

P171

Understanding the risk of surgical site infection following cardiac surgery in England, Jan 2010 – March 2020

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Abstract

Surgical site infections (SSIs) following cardiac surgery can constitute serious complications, and are associated with increased hospital stay and costs to the healthcare system. We aimed to investigate the risk factors associated with SSI in cardiac surgery in England.

Data on coronary artery bypass graft (CABG) and other cardiac operations (non-CABG) from independent and NHS hospitals in England participating the national SSI Surveillance Service (SSISS) between 2010 and 2020 were analysed. Prospective follow-up of patients for 30 days (1 year where implants used) was undertaken to identify SSIs meeting standard clinical case definitions. The odds of SSI for each cardiac category were estimated using penalised multivariable regression with Firth correction.

Twenty-three NHS and 3 independent sector hospitals submitted 83,267 operations, 58,178 (69.9%) CABG, and 25,089 (30.1%) non-CABG operations. For CABG, the median age was 67.8 years. For non-CABG it was 64.4 years, with 12.0% being under 18 years. Including sternal and harvest sites, the overall unadjusted SSI risk was 3.2% (95%CI: 3.0-3.3%) for CABG, and 1.4% (1.3-1.6%) for non-CABG.

Obesity was associated with increased adjusted odds of infection in CABG (aOR1.68; 95%CI: 1.50-1.88) and non-CABG surgery (aOR=2.34; 1.72-3.19). For CABG, emergency surgery (aOR=2.02; 1.34-3.04), operation duration above 300 minutes (aOR=1.74; 1.50-2.01), female sex, high ASA score, and having multiple surgeries were strongly associated with increased adjusted odds of SSI.

While not all the identified risk factors may be modifiable, these preliminary results offer insight into the complex SSI risks in cardiac surgery, building the evidence base for more targeted interventions.

Category: Surveillance and epidemiology

P172

Epidemiology and Outcome of Bloodstream Infections among people living with HIV (PWH) in Thailand: a 13-year review at a University-Based Tertiary Care Hospital

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Abstract

Bloodstream infection (BSI) is the major cause of morbidity and mortality of people living with HIV. We aimed to determine the epidemiology, type of infections, microbiology, and outcomes of BSI among hospitalized PWH in Thailand. A retrospective study was conducted among all hospitalized PWH (aged ≥ 18 years) who had a positive blood culture at Siriraj Hospital during January 1, 2008, to December 31, 2021. 493 PWH had at least 1 BSI. They were male (62%) with a median age of 40 years (IQR 32-47), CD4 cell count of 27 (IQR 9-76) cells/mm³, receiving antiretroviral treatment (20%) and Sepsis (70%). More than eighty percent had primary BSI without localizing source. For a total of 585 isolated pathogens, the most common causative agents were Gram-negative bacteria (36.6%), followed by mycobacteria (26.5%), fungi (25.8%) and Gram-positive bacteria (11.1%). Majority of hospitalizations were community-acquired BSI (86.3%), the most frequent pathogens were *Cryptococcus neoformans* (25%), *Mycobacterium tuberculosis* (22%), *Salmonella* spp. (18%), whereas *Escherichia coli* (22%), *Acinetobacter baumannii* (14%) and *Klebsiella pneumoniae* (14%) were prevalent in nosocomial BSI. The overall in-hospital mortality was 29.4%. Factors associated with mortality were age >50 years (aOR, 2.16; 95% CI, 1.14-4.09), CD4 cell count ≤ 50 cells/mm³ (aOR, 2.17; 95% CI, 1.16-4.03), loss to follow-up after HIV diagnosis (aOR, 6.91; 95% CI, 2.62-18.21), and shock (aOR, 28.1; 95% CI, 15.7-50.3). Opportunistic infections are the key causes of community-acquired BSI. The mortality rate of BSI in these patients remains high especially in PWH with low immunity, aging and history of treatment interruption.

P173

Mortality review in patients presenting with Pseudomonas species bloodstream infections (BSI)- A reassuring update.

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Abstract

BSI caused by Pseudomonas species remains a significant cause for concern due to high morbidity and mortality with it. It is an opportunistic pathogen that causes severe infections in immune-compromised populations. We conducted this study to overview mortality outcomes in patients who presented with Pseudomonas species BSI between January and December 2022. This is a single-centre retrospective observational study designed at the largest University hospital catering for a huge population of immune-compromised and transplant recipients. We identified 72 episodes of BSI with Pseudomonas species. Pseudomonas aeruginosa remained the predominant species (94%) causing BSI in vulnerable patients. The likely focus of infection was urinary, central line and intra-abdominal infections (31%, 16.75%, and 13.9% respectively). We observed 20% (15/72) overall mortality in patients presenting with Pseudomonas species BSI. As predicted, mortality remained predominant (60%) in older age groups. 54% of patients from the mortality cohort had a malignant condition, 26% haematological and 26% oncology condition. Interestingly, 46% (7/15) patients died without receiving an appropriate antibiotic due to death within 24hrs of presentation. It can further be speculated, that actual mortality from those who were treated, comes down to 11% (8/72) which is much lower than expected. We conclude that despite the known pathogenicity of Pseudomonas species in causing severe infection, with appropriate anti-pseudomonal antibiotics, mortality can be significantly reduced. This is reassuring news for the antimicrobial stewards in the dooming climate of resistance.

P174

Multidrug resistant micro-organisms follow up of carriership in a university hospital in the Netherlands

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Abstract

In our institution, the number of patients carrying a multidrug resistant micro-organism (MDRO) is increasing every year. The aim of this study is to follow-up MDRO colonization status in carriers and to actively inform and update carriers on their MDRO status, thereby stimulating patient participation and ownership. Patients were informed by their doctor about their MDRO carriership and asked to participate. Participants were asked to take fecal swabs at predefined time intervals. Thirty-nine of 82 patients were negative for any MDRO (38%) after a follow up period of 13 months. Sixty percent 60% of the participants did no longer carry the initially detected MDRO, of which 69% of them had 2 consecutive negative cultures for any MDRO, and hence were de-labeled as MDRO carrier in the electronic medical record. Patients were generally satisfied to know their MDRO status. Communication about MDRO status seems important for patients to understand infection control measures they encounter.

P175

MBL2 variation in African populations in the context of SARS-CoV-2 infection

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Abstract

Mannose Binding Lectin 2 (MBL2) encodes a protein that plays an instrumental role in innate immunity by detecting foreign pathogens and initiating inflammation through the complement cascade. Subsequently, serum levels of MBL2 vary drastically across worldwide populations and are influenced by mutations along the gene. Since MBL2 plays a crucial role in disease elimination, a deficiency can have an immense impact on disease infectivity and progression. Therefore, mapping the prevalence and distribution of MBL2 mutations which cause a deficiency has been a prominent tool used to understand disease risk across the globe.

Interestingly, studies have shown that individuals from African populations carry some of the most variable and polymorphic MBL2 genes. Despite this, little research has investigated how this affects disease pathogenesis and prognosis in these populations, especially in the context of COVID-19.

Nevertheless, in SARS-CoV-2 infection MBL2 plays a dual role of inhibiting viral entry initially, but then contributes to the damaging cytokine storm once infection is established. Therefore, a deficiency seems to leave individuals with an increased risk of contracting SARS-CoV-2 but may be beneficial in the long-run by averting cytokine-mediated lung pathology. This is a fascinating dichotomy which has had massive implications for COVID-19 disease severity and could be relevant to other diseases.

By studying this concept further and considering the role of additional humoral innate immunity pattern recognition molecules, we could try get a better understanding of further disease susceptibility and protection. This must be done in the context of understudied African populations moving forward.

P176

Insights from High Throughput qPCR of Environmental Samples on a UK Hospital Ward over 6 Months: Interactions from "Missingness" between the Air and Surface Microbiome from the Addenbrookes Air Disinfection Study (AAirDS)

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Abstract

Background: The characterisation of the microbiome in hospital environments is crucial for understanding the spread of infections and implementing effective infection control measures.

Methods: High throughput quantitative polymerase chain reaction (qPCR) was used to investigate the microbial composition in environmental samples collected from four locations within the hospital ward, including air, worktops, sinks, and floors, over a six-month period. Temporo-spatial correlations were examined to identify the presence or absence of microbial targets in different sample locations. The cycle threshold (CT) values were used as an indicator of target abundance, with higher CT values indicating lower target abundance.

Results: Out of a total of 1502 targets, 178 were detected simultaneously in every sample location. 1324 positive samples showed "missingness" in one or more of the remaining sample locations taken on the same day. The worktop exhibited the highest frequency of no detection, followed by the sink, air, and floor. There were significantly higher CT values for all targets in many sample locations when there was no detection in one or more of the remaining locations.

Conclusions: This study demonstrates that detection "missingness" is common in the air and surface microbiome of a UK hospital ward. The observed changes in CT values indicate potential interactions between the air and surface microbiome, whereby the absence of a target in one location may lead to reduced abundances in other locations. These findings emphasize the importance of considering the multi-dimensional dynamics of microbial colonization and dispersal within hospital environments for effective infection control strategies.

P177

***Escherichia coli* bacteraemia reductions during the COVID-19 pandemic in England, 2020-21**

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Abstract

Background

During the COVID-19 pandemic, large and sustained reductions in *Escherichia coli* bacteraemia cases were observed in England, which changed the previous trend of year-on-year increases. We aimed to estimate the number of expected but not observed (“missing”) *E. coli* bacteraemia cases in England and investigate drivers behind the changes.

Methods

Laboratory-confirmed community-onset (<48h from hospital admission) *E. coli* bacteraemia (CO-BSI) cases were identified from the national bacteraemia surveillance system from January 2016 to December 2021. Interrupted time-series analyses used negative binomial regression models to evaluate the effects of the pandemic (2020-21) on *E. coli* CO-BSI cases (observed versus expected) and changes in demographics and mortality were investigated.

Results

During the pandemic in 2020-21, 13,684 (95% confidence interval: 11,052-16,316) *E. coli* CO-BSI cases were estimated to be “missing”, assuming the English population remained stable. “Missing” cases mainly occurred in the ‘White’ ethnic group (85.8%, 84.2%-88.2%; largest ethnic group of observed cases) and older age groups (75-84y and ≥85y; 55.4%, 54.3%-57.0%). The gap between the observed and expected cases reduced by 18.9% (16.0%-23.1%) to 11,097 (8,496-13,699) when allowing for changes in the underlying population at-risk due to competing risk of death during the pandemic, accounting for most “missing” cases in the ≥85y (64.8%, 59.2%-78.1%) but few in those <60y (5.2%, 5.0%-5.5%).

Conclusions

Our study identified approximately one fifth of the “missing” *E. coli* CO-BSI cases were due to competing risk of mortality, with substantially more among older individuals. Further investigations into other factors involved may provide opportunities for targeted prevention interventions.

P178

Standardising E. coli urine antibiograms across an acute teaching hospital – the impact of age, sex, speciality and location on antibiogram results

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Abstract

Background: Antibiograms are a core component for antimicrobial stewardship activities. Cumulative antibiograms are accessible but may not reflect differing clinical populations requiring surveillance.

Methodology: The microbiology data for all E. coli urine cultures processed at a NHS Trust (London, UK) was analysed; Jan-2021-Jun-2023. Antibiotic susceptibility was analysed for samples across patient sex, age, clinical specialty and location for comparison.

Results: A total of 9,667 urine cultures from 7,873 unique patients with antibiotic susceptibility tested E. coli urine cultures were analysed across two hospitals. Rates of resistance to 1st line antibiotics was higher in men for all agents except fosfomycin ($p=0.0001$). Age-related differences to 1st line antibiotic susceptibility were seen; resistance across all antibiotics was higher in children and older adults compared to 16-40year olds. Resistance was higher to 1st line agents in patients admitted to medical and admission wards compared to obstetrics, genitourinary and paediatrics. Removing duplicate patient samples trended towards lower overall resistance but a statistical difference seen only with ciprofloxacin susceptible antibiogram (84.3% vs 86.0, $p=0.0026$). Significant differences in susceptibility was observed in hospital specific antibiograms for co-amoxiclav and cephalixin only.

Conclusion: Methodology for antibiograms can have significant impact on reported susceptibility testing. Younger female adults under GU clinics or obstetrics have high volume of E. coli urine testing but lower rates of resistance. Bespoke antibiograms for age, sex and clinical specialty is advised to guide empiric guidelines. De-duplicating patient results had no significant impact on total antibiogram for all 1st line antibiotics with exception of ciprofloxacin.

P179

Impact of COVID-19 on central line-associated bloodstream infection incidence in acute care hospitals in Belgium: comparison between the pre-pandemic period and the first two COVID-19 years

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Abstract

In Belgium, the national surveillance of bloodstream infections (BSI), mandatory since 2014 for acute care hospitals, collects data on hospital-associated (HABSI) and central line-associated bloodstream infections (CLABSI). The BSI incidence did not change significantly during 2013-2019. The COVID-19 pandemic majorly impacted the healthcare system.

National BSI surveillance data was analyzed to calculate CLABSI incidence and to assess the impact of COVID-19 on incidence. A negative binomial longitudinal regression model (population-averaged) was used to assess changes in CLABSI incidence between the pre-pandemic period (2013-2019) and the COVID-19 years (2020-2021), separately for hospital-wide and intensive care unit (ICU)-only settings.

The 2020 and 2021 incidence calculation was based on respectively 97 and 99 participating hospitals. The hospital-wide CLABSI incidence increased from 2.0 per 10,000 patient-days (pd) in 2019 to 2.6 both in 2020 and 2021. The ICU-only CLABSI incidence increased from 11.6 per 10,000 pd in 2019 to 18.2 in 2020 and 17.6 in 2021. The incidence in the COVID-19 years (2020-2021) significantly increased comparing with the pre-pandemic period (2013-2019), with an incidence rate ratio (IRR) of 1.28 for hospital-wide CLABSI (95% CI [1.15-1.43]) and an IRR of 1.47 for ICU-only CLABSI (95% CI [1.22-1.76]).

The CLABSI incidence increased substantially during the first two COVID-19 years compared with the pre-pandemic period. Possible explanations could be changes due to COVID-19 in the hospital patient population and pressure on infection prevention measures and resources, yet further analysis of available data from this period is necessary to demonstrate these hypotheses.

P180

Exploring the rise in Group A Streptococcus; one infection department's experiences

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Abstract

Background

Group A Streptococcus (GAS) causes a broad spectrum of disease from sore throat to necrotising fasciitis and death. Nationally, there has been a recognised increase in GAS cases over the past year.

Method

We analysed the data from 2629 GAS isolates from all specimen types, from January 2019 to June 2023, processed in our laboratory which serves 3 hospitals and primary care.

Results

Rates of GAS fell during the COVID-19 pandemic from around 70/month in 2019 to 12/month in 2021, but increased in 2022 to a peak of 220/month in December.

We analysed the antibiotic susceptibilities of all 2629 GAS isolates. 100% of isolates were Penicillin sensitive. 7.7% were clindamycin resistant, 7.5% clarithromycin resistant and 12.3% doxycycline resistant.

We studied a case series of 83 patients with GAS bacteraemia. The number of bacteraemias increased from 4/year in 2021, to 25 between January and June 2023. Clinical presentations varied, but the majority included skin and soft tissue infection. In children, 29% had chickenpox recently.

The proportion of GAS bacteraemias that occurred in children increased from 6.9% in 2019 to 32% in 2023 so far.

Emm typing of blood culture isolates demonstrated emm type 1 increased from 21% in 2019 to 78% in 2023.

Mortality in cases of GAS bacteraemia has increased from 6.9% in 2019 to 20% in 2023.

Conclusion

These data can be compared with national surveillance data, and learning points can be used to improve our practice for future cases of GAS.

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Demographics and Molecular Epidemiology of Group A *Streptococcus* and *Staphylococcus aureus* Isolates from Asylum seekers in England, 2022

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Abstract

Background

In 2022, enhanced surveillance of recently arrived asylum seekers (AS) reaching the UK via small boats, highlighted high rates of skin and soft tissue infections with broad aetiology. To address the health needs of AS, a UKHSA Briefing Note asked laboratories to submit Group A *Streptococcus* (GAS) and *Staphylococcus aureus* (SA) isolates from symptomatic AS to the national *Staphylococcus* and *Streptococcus* Reference Service, Colindale.

Methods

Isolates received between 25/10/22 and 06/02/2023 underwent whole genome sequencing (WGS) and typing (Multilocus sequence typing for SA, *emm* typing for GAS). Data were analysed to identify diversity of isolates, clonal spread and virulence factors.

Results

For GAS, 103 isolates from 102 patients were received. Most patients were male (n=91), with a median age of 22 years (range 6-61 years). Typing revealed a diverse range of *emm* types (37), notably *emm* 60.11 (15%; n=15) followed by *emm* 104 (8%; n=8). SA co-infection was recorded for 35% cases (n=36). For SA, 130 isolates from 109 patients were received, median age was 23 (range 6-61 years). 45% (59/130) were methicillin-resistant SA (MRSA). 10% (13/130) were PVL toxin positive on WGS.

Conclusion

Within this mobile population with complex health needs there are high rates of MRSA colonisation/infection, with GAS/SA co-infection frequently encountered. This poses challenges for clinical management, particularly empirical treatment regimes. Molecular analysis of GAS has highlighted a diverse range of *emm* types, distinct from circulating UK strains. Further molecular analysis is planned to look at case clustering and co-transmission within this underserved population

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Precipitous Deaths in Children from Invasive Group A Streptococcus: An Analysis of Modifiable Factors and Recommendations for Prevention

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Abstract

Background

The elevated number of child deaths caused by invasive Group A Streptococcus (iGAS) infections over the winter of 2022/23 in England raised widespread concerns among healthcare professionals (HCP) and public alike. To understand factors underpinning these deaths, we undertook a qualitative analysis of community deaths in children from iGAS infection.

Method

Community deaths (pronounced dead at home or within one hour of A&E arrival) in children <15y due to iGAS infection between September 2022 and February 2023 were identified using national UKHSA laboratory surveillance linked to the NHS spine and the National Child Mortality Database (NCMD). Case-management records held by UKHSA and NCMD were reviewed to extract salient features and events.

Results

Twenty children were identified who died from iGAS infection in the community. Median age was 3.5y (IQR 2-6y). Median time between symptom onset and death was 4 (range 1-8) days with approximately 80% demonstrating rapid clinical decline following a mild viral-type illness (coryza/cough/fever); just under half (45%) had documented viral co-infection. Half of cases had known healthcare interactions prior to death including 3 with multiple healthcare interactions.

Conclusion

Community iGAS deaths occurred rapidly after symptom onset, and were initially indistinguishable from viral infections. The suspicion or detection of viral infection may have given false reassurance to HCPs in spite of clinical decline. Improving clinical awareness of iGAS symptoms, provision of explicit safety-netting advice for parents, along with evaluation of point-of-care testing and clinical prediction scores should be considered.

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Mortality and causes of death amongst 35,691 adults with bloodstream infection – a population-based study

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Abstract

Background

Bacteraemias, or bloodstream infections (BSI), are common, life-threatening infections. However, it remains unclear whether deaths following BSI are primarily due to the infection itself or underlying comorbidities. We aimed to determine mortality and causes of death for four leading BSI pathogens.

Methods

This retrospective cohort study was conducted within the SAIL Databank, containing anonymised population-scale electronic health record data for Wales, UK. We included adults with *Escherichia coli*, *Klebsiella sp*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* BSI between 2010-2022 using linked data from Public Health Wales and causes of death from the Office for National Statistics. 30-day all-cause and sepsis-involving mortality were compared using Cox proportional hazards and competing risk regression respectively.

Findings

We identified 35,691 adults with BSI, with *E. coli* being the most prevalent (62.2%). A significant proportion of deaths occurred within two days of blood culture draw (31.6%). The 30-day mortality rates varied by pathogen. Adjusted analyses revealed that all organisms had a higher 30-day mortality vs. *E. coli* with MRSA the highest (HR: 2.04 [1.84-2.30], $p < 0.001$).

Cancer was the leading underlying cause of death following BSI for all organisms, particularly deaths occurring after 30 days (25.2% <30, 35.9% 30-90 days). 25.5% of deaths within 30 days involved sepsis. MRSA was associated with the highest sepsis-specific mortality vs. *E. coli* (HR: 2.55 [2.13-3.05], $p < 0.001$).

Interpretation

This population-level study challenges the assumption that most deaths following BSI are directly attributable to the infection. These findings underscore the need to re-evaluate clinical trial design and develop better preventative strategies for BSI.

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Epidemiology of recurrent invasive group A streptococcal (iGAS) infection in England, 2015-23

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Abstract

Introduction

Recurrent invasive group A streptococcal (iGAS) infections are rare but increasingly recognised. We describe the frequency and characteristics of recurrent iGAS in England.

Methods

iGAS infection (sterile-site) reports between 01/01/2015-23/06/2023 were extracted from routine and reference laboratory national databases, then merged and grouped into 14-day no-repeat episodes. Episodes were linked to NHS Digital Hospital Episode Statistics for enrichment. 'Recurrent' was defined as >1 episode, >14 days apart; first episodes diagnosed up to 23/03/2022 were analysed allowing 15-months' follow-up for recurrence. Cases where death occurred within 14 days of first episode were excluded. Chi-square tests and logistic regression were performed to investigate factors associated with recurrence.

Results

Between 2015-2023, 1.6% (177/10,902) of iGAS episodes were recurrent, occurring in 168 unique patients (median age 41.5 at first episode; IQR 33-65.3); median time to recurrence was 417 days (IQR 245-754 days; range 30-2547 days). Nine patients experienced a third recurrence. The majority of recurrent episodes occurred in males (62%; CI 55-69%) and the 15-44y age group (47%; CI 40-55%) with only 12 occurring in children. Among typed recurrent cases, the most frequent *emm* types were *emm66*, *emm77*, *emm108*, and *emm1*, with the same *emm* type between episodes identified for 29% (CI 21-39%).

Conclusion

Although rare, recurrent iGAS infection is an important phenomenon that requires further study to define risk factors and prevention strategies. The long delay between episodes suggests host factors may be principally responsible. Given the age demographic and *emm* distribution, we speculate that illicit drug use or homelessness are probable risk factors.

Category: Sustainability in healthcare

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Environmental impact of a diagnostic stewardship intervention for superficial swab cultures.

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Abstract

The Healthcare sector is estimated to account for ~4% of the total CO₂e emissions in the UK. In addition, diagnostic laboratories produce huge quantities of unrecyclable plastic waste due to single-use reagents and consumable items. Despite this, little literature is available outlining the environmental impact of diagnostic microbiology laboratories. Superficial wound swabs are one of the most frequently tested microbiological specimen types. The testing pathway is not well optimised and the overutilisation of laboratory services for the analysis of poor-quality samples has a negative impact on the quality of laboratory reporting, environmental sustainability and has associated cost implications.

We implemented a diagnostic stewardship intervention over a 2-week period in which we rejected specimens with clinical details not suggestive of an active skin-soft tissue infection. We assessed the impact on the overall volume of samples processed, the carbon footprint, the volume of plastic waste generated and the cost of service provision. 129 low-value superficial wound swabs were rejected by the laboratory, resulting in the prevention of 8.93kg of unrecyclable plastic waste, 31.2kgCO₂e and not insignificant financial savings. The study demonstrates how by optimising the diagnostic pathway for superficial swab culture and sensitivity testing, we can not only increase the quality of our laboratory output, but also simultaneously reduce our impact on the environment without negatively impacting patient management.

Category: Tropical infections

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Cutaneous mycobacterium tuberculosis of the foot complicated by squamous cell carcinoma (SCC), Case report from Saudi Arabia

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Abstract

A 24 -years-old male known case of congenital meningocele complicated by left foot drop was Referred to our hospital to investigate a chronic non-healing ulcer to rule out malignancy.

It started as painless nodules and shallow ulcers then spontaneous discharging sinuses developed. Over 4 years, it continued to worsen progressively into disfiguring swelling despite multiple courses of antibiotics and trials of drainage and curettage with Only partial improvement. Later new fungating masses appeared and rapidly enlarged within a month into large cauliflower-like ulcerated tumors, this was associated with fever and weight loss.

Biopsy of the skin ulcers showed SCC and imaging showed enlarged inguinal lymph nodes suggestive of metastasis, He underwent left below-knee amputation and inguinal LN excisional biopsy. Interestingly in addition to finding SCC the acid-fast bacilli stain and culture were also positive for mycobacterium tuberculosis and the histopathology confirmed caseating granuloma.

The diagnosis of Cutaneous tuberculosis complicated by SCC was presumed based on the chronic presentation and histopathology report. In this case, risk factors would be living in an endemic area and his mother working in a prison, and since there was no evidence of pulmonary involvement, the possible mode of infection could be exogenous inoculation of the bacilli given the history of foot drop and recurrent injuries, finally first line anti-tuberculous was commenced to be followed by chemotherapy after multidisciplinary team agreement.

This case illustrates the importance of listing the rare differential diagnosis of chronic skin ulcers to include tuberculosis and pursuing the diagnosis in endemic regions.

Category: Viral infections

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When It's Not in Your Genes...A Case of HHV-6 Encephalitis in an Immunocompromised Host

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Abstract

A 58-year-old female with a background of diffuse large B-cell lymphoma was admitted to the intensive care unit following a seizure. Initially a diagnosis of immune effector cell-associated neurotoxicity syndrome (ICANS) following chimeric antigen receptor (CAR) T-cell therapy was suspected. The cerebrospinal fluid demonstrated a white cell count of 25/mm³ (predominately lymphocytes), normal glucose and an elevated protein of 0.63 g/L, suggestive of viral infection. An MRI scan of the head demonstrated medial temporal lobe encephalitis. Human Herpesvirus-6 (HHV-6) was subsequently detected in the CSF and blood; this is a recognised cause of encephalitis post CAR-T therapy.

It can be challenging to differentiate active HHV-6 infection from chromosomally integrated HHV-6 (ciHHV-6). ciHHV-6 is an inherited condition within 1% of the population. HHV-6 can integrate its genome into telomeres of human chromosomes. Testing for ciHHV-6 will show high positive viral loads approximately equal to peripheral leukocyte numbers; in these cases, this is not an indicator of active infection.

In the context of undetected HHV-6 in historical blood samples, and multiple further blood samples with changing HHV-6 viral loads, this was concluded as consistent with active HHV-6 infection. Investigations for other infective causes of encephalitis were negative. Antiviral therapy was changed from empirical aciclovir to foscarnet however, the patient died despite best supportive care. This case highlights the importance of considering active HHV-6 infection post CAR-T therapy. Further, ciHHV-6 is a phenomenon which needs to be considered in light of inclusion in multiplex molecular diagnostic panels.

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Application of 3D image analysis to facilitate the identification of antiviral inhibitors

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Abstract

The global spread of SARS-CoV-2 has highlighted the necessity for more effective antiviral screening methods to facilitate the identification of inhibitors. Most small molecule inhibitors are initially identified using 2D immortalised cells that are amenable to high-throughput drug screening; however, these cells fail to recapitulate the complex lung microenvironment and tissue-specific architecture. Consequently, many inhibitors fail to show antiviral activity in animal models. Alternatively, 3D cell culture models contain multiple cell types, mimic spatial organisation of the lung, and express gene profiles comparable to *in vivo*. Here we create improved 2D and 3D cell culture systems to identify drugs exhibiting antiviral activity against influenza virus. First, we establish a 2D real-time assay to monitor virus replication kinetics using a fluorescently tagged influenza virus. We demonstrate this assay can be used to screen potential antiviral inhibitors as findings show influenza virus replication kinetics can be monitored in real-time over 48 hours and model drug favipiravir inhibits influenza virus replication with an IC₅₀ value of ~25 µM. Second, we differentiate human airway cells into respiratory epithelium. Using confocal microscopy and image analysis to track influenza virus replication in 3D, we show virus migration through multiple cell layers. We analysed depth and volume of infection foci, tissue thickness, and cilia damage, to determine efficacy of antiviral inhibitors. Our data demonstrate the potential utility of using real-time imaging and 3D models of infection to monitor respiratory virus replication and identify antiviral inhibitors. These findings could be implemented for future inhibitor studies against viral pathogens.