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Culture-Negative Pontocerebellar Abscess presenting as a Stroke Mimic: Diagnostic Utility of Sanger Sequencing

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Background:
Brain abscesses are life-threatening infections with a mortality rate of 10%, requiring early microbiological diagnosis to guide targeted therapy. Conventional culture and PCR panels may fail, particularly in fastidious anaerobic or low–bacterial load infections. We describe a diagnostically challenging odontogenic pontocerebellar abscess presenting as a stroke mimic in which Sanger sequencing of bacterial 16S rRNA gene from cerebrospinal fluid (CSF) was decisive.

Case Presentation:
A 78-year-old man presented with acute focal neurological deficits suspicious for a posterior circulation stroke. A single episode of pyrexia prompted a lumbar puncture, revealing turbid CSF with a white cell count 10,400 cells/µL (polymorph predominant), protein >6000 mg/L, glucose 0.4 mmol/L, and lactate 15.2 mmol/L. Initial CT head imaging was unremarkable. Due to persistent clinical concern, repeat CT imaging revealed a small ring-enhancing lesion. This was characterised on an MRI as 15 × 11 mm rim-enhancing pontocerebellar abscess with diffusion restriction, with direct communication with the fourth ventricle, explaining the marked inflammatory CSF profile despite absence of meningeal involvement.

CSF Gram stain and culture were negative. Meningoencephalitis PCR panel and broad-range 16S rRNA PCR were also negative. The initial 16S assay likely fell below its lower limit of detection (10^3 CFU/mL). Given high clinical suspicion of pyogenic infection, amplified bacterial 16S rRNA gene sequencing (Sanger method) was performed on the CSF and identified Fusobacterium nucleatum, an obligate anaerobe associated with odontogenic infection.

No surgical drainage was undertaken due to lesion location and procedural risk. The patient received eight weeks of intravenous ceftriaxone and metronidazole. Serial MRI demonstrated reduction in abscess size to 6 × 4 mm. Dental assessment revealed multiple infected carious lesions, supporting an odontogenic source.

Discussion:
This case highlights key infectious diseases principles: brain abscess may mimic acute cerebrovascular accidents, early imaging may be non-diagnostic, and culture-negative CNS infections necessitate escalation to molecular diagnostics. 16S PCR and the Meningio-encephalitis PCR panel were both negative, yet Sanger sequencing identified an anaerobic pathogen, directly informing antimicrobial therapy optimisation.

Conclusion:
Brain abscesses may mimic an acute stroke, and early imaging may be non-diagnostic. Markedly inflammatory CSF can occur when abscesses communicate with the ventricular system, even without meningitis. In culture-negative CNS infection, particularly when anaerobes are suspected, complementary molecular approaches are critical. This case highlights the diagnostic value of Sanger-based 16S rRNA sequencing in low–bacterial load infection where conventional PCR panels are unrevealing, directly informing antimicrobial optimisation.

Acute rheumatic fever with rheumatic heart disease despite appropriately treated invasive Group A Streptococcal infection

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Background:
Acute rheumatic fever (ARF) is an immune-mediated sequelae of untreated or uncontrolled Group A Beta-haemolytic Streptococcus (GAS) infection. Prompt antimicrobial treatment of GAS significantly reduces risk of developing ARF, albeit does not entirely mitigate it. Current literature suggests that occurrence despite antimicrobial therapy is rare, and progression to rheumatic heart disease (RHD) with valvular destruction rarer still. We present a case of invasive GAS with appropriate treatment complicated by severe rheumatic heart disease requiring surgical valve replacement.

Case presentation:
A 43 year old male presented with fever, confusion and reduced mobility over five days. Examination revealed left hand cellulitis and suspected left ankle septic arthritis. Blood cultures on presentation grew Group A Streptococcus (GAS) and IV benzylpenicillin 2.4g four hourly and oral linezolid 600mg twice daily were commenced. Laboratory investigations demonstrated elevated inflammatory markers, lactate and troponin of >36,000ng/L. He was admitted to ICU for vasopressor support and underwent arthroscopic washout of the ankle with no intraoperative pus identified and no growth from tissue samples. Initial transthoracic echo demonstrated mildly reduced ejection fraction only and following initial clinical improvement he was stepped down to CCU and managed for presumed myocarditis. Recovery after one week was complicated by cardiac arrest with subsequent complete heart block managed with external pacemaker implantation and readmission to ICU. Transoesophageal echo demonstrated torrential aortic regurgitation with a 0.8mm flail vegetation suggestive of rheumatic verrucae. Revised Jones criteria for ARF were fulfilled by presence of myocarditis and polyarthritis, fever and raised inflammatory markers despite ongoing appropriate treatment with benzylpenicillin for invasive GAS. The patient was transferred to a tertiary cardiothoracic centre and underwent mechanical aortic valve replacement with pacing lead extraction. Intraoperative findings confirmed gross destruction of the aortic valve. Tissue samples, pacing lead and serial blood cultures yielded no growth supporting sterile valvular involvement consistent with RHD. Following valve replacement the patient gradually improved and completed four weeks of secondary prophylaxis with ceftriaxone 2g twice daily.

Conclusion:
This case emphasises that ARF can still occur in the context of invasive GAS infection despite timely and appropriate antimicrobial treatment, and underscores the need for clinician vigilance to maintain a high index of suspicion in patients presenting with correlating symptoms following recent streptococcal infection. The rapid onset of valvular destruction requiring surgical replacement highlights the importance of prompt confirmatory recognition and interventional management to mitigate the risk of mortality and long-term morbidity associated with RHD.

Septic Shock and Severe Acute Kidney Injury Secondary to Salmonella Typhimurium Bacteraemia in a Young Immunocompetent Farm Worker: An Unusual Presentation of Invasive Non-Typhoidal Salmonellosis.

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Background:
Non-typhoidal Salmonella (NTS) infection most commonly causes a self-limiting gastroenteritis. Invasive disease with bacteraemia occurs in a minority of cases and is typically associated with extremes of age, immunosuppression, or significant comorbidity. Progression to septic shock and severe acute kidney injury (AKI) in young, otherwise healthy adults is rare. Occupational exposure to livestock represents an additional risk factor for zoonotic acquisition. We describe a case of life-threatening NTS bacteraemia in an immunocompetent farm worker.

Case Presentation:
A 31-year-old previously well female dairy farm worker presented following collapse, preceded by three days of profuse non-bloody diarrhoea, vomiting, myalgia, and poor oral intake. On arrival she was profoundly hypotensive, tachycardic, anuric, and peripherally shut down, with a diffuse blanching erythematous rash. She was apyrexial.
Investigations demonstrated marked inflammation (CRP 300 mg/L), metabolic acidosis with lactataemia (3.27 mmol/L), and KDIGO stage 3 AKI (creatinine 699 µmol/L). Creatine kinase was elevated (2904 IU/L). There was no evidence of haemolysis or thrombocytopenia to suggest haemolytic uraemic syndrome. Extensive infectious and immunological screening, including testing for leptospirosis, hantavirus, meningococcal disease, and blood-borne viruses, was negative.
Blood cultures grew Salmonella enterica serovar Typhimurium, sensitive to ceftriaxone, ciprofloxacin, co-trimoxazole, and meropenem. Stool culture and PCR confirmed Salmonella species, supporting a gastrointestinal source. Imaging excluded obstructive or structural renal pathology.

Management and Outcome:
Empirical intravenous ceftriaxone was commenced and rationalised to azithromycin following susceptibility results, with a total 14-day course completed. Aggressive, carefully monitored intravenous fluid resuscitation was initiated. The patient remained fluid responsive and did not require vasopressors or renal replacement therapy. Renal function recovered fully within two weeks.

Conclusion:
This case highlights that invasive NTS infection can cause septic shock and severe AKI in young, immunocompetent adults without recognised risk factors. Occupational and environmental exposure history is essential in patients presenting with severe diarrhoeal illness and sepsis. Early blood culture acquisition, prompt targeted antimicrobial therapy, and aggressive supportive management are critical to optimise outcomes in this uncommon but potentially life-threatening presentation.

A diagnostic conundrum of culture-negative prosthetic valve endocarditis.

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Background:
Chronic Q fever caused by Coxiella burnetii, is a recognised but uncommon cause of culture-negative infective endocarditis, particularly in patients with prosthetic valves or congenital heart disease. Diagnosis may be delayed due to indolent presentation, negative blood cultures, and variable imaging findings.
Case presentation:
A 57-year-old man with complex congenital heart disease and prior mechanical aortic valve replacement presented with progressive heart failure symptoms, unintentional weight loss, and recent pyrexia. Investigations demonstrated mildly elevated inflammatory markers (CRP 23 mg/L) without leucocytosis, consistent with baseline pancytopenia. Seven sets of blood cultures obtained across two hospitals were negative. Transthoracic echocardiography suggested severe aortic regurgitation with a mobile echogenic structure adjacent to the prosthetic valve. Transoesophageal echocardiography confirmed severe aortic regurgitation with prosthetic valve vegetation and an associated aortic root abscess in keeping with prosthetic valve endocarditis. In contrast, positron emission tomography–computed tomography (PET-CT) demonstrated no abnormal uptake suggestive of endocarditis, despite features of cardiac failure and systemic congestion. Given persistent culture negativity, further tests for culture-negative endocarditis were undertaken. Although no epidemiological risk factors were initially identified, repeat questioning following diagnostic suspicion revealed consumption of unpasteurised milk and recent visits to petting farms. Serological testing demonstrated markedly elevated Coxiella burnetii phase I IgG titres (>1:10,240) with elevated phase I IgA and phase II antibodies, consistent with chronic infection. Polymerase chain reaction testing of aortic root abscess tissue obtained intraoperatively was also positive for Coxiella burnetii.
Management and outcome:
The patient underwent redo sternotomy with drainage of the aortic root abscess, mechanical valve explantation, and homograft aortic valve replacement. Targeted therapy with doxycycline and hydroxychloroquine was initiated under multidisciplinary infective endocarditis team oversight, with national reference laboratory input. Infection was notified to public health authorities. At early follow-up, the patient demonstrated clinical recovery with normalised inflammatory markers and stable functional status.
Conclusion:
This case highlights the diagnostic complexity of chronic Q fever prosthetic valve endocarditis and demonstrates that PET-CT may be non-diagnostic despite invasive structural disease. Early recognition of epidemiological risk factors, specialist serology, tissue-based molecular confirmation, and coordinated multidisciplinary and public health involvement are essential to optimise outcomes.
Learning Objectives:
1. Recognise chronic Q fever as an important cause of culture-negative prosthetic valve endocarditis.
2. Understand the limitations of PET-CT in chronic Q fever endocarditis despite echocardiographic evidence of invasive complications.
3. Identify the role of targeted exposure history, serology, tissue PCR, and multidisciplinary management in timely diagnosis.

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ROVER-ID: Estimating the Undiagnosed Burden of Tuberculosis and Chronic Hepatitis B Infection in Northern England Using Integrated Epidemiological, Demographic, and Geospatial Methods

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Background:

Tuberculosis infection (TBI) and chronic hepatitis B (CHB) remain major global causes of morbidity and mortality. In England, an estimated 270,000 people live with CHB and 4,855 new TB cases occur annually, with both infections disproportionately affecting individuals born outside the UK. Many affected communities face barriers to healthcare access, and local estimates of undiagnosed infection are essential for targeted case finding and service planning.

Methods:

Retrospective cohort studies identified all patients with active or latent TBI and CHB managed at Hull University Teaching Hospitals (HUTH) in 2023. Demographic and clinical data were linked to 2021 Census denominators stratified by country of birth, age, sex, postcode district, and year of arrival. Global and UK-specific prevalence estimates (Ding et al., Polaris Observatory, UKHSA migrant screening data) were applied to estimate community prevalence and undiagnosed burden. Geospatial mapping and Index of Multiple Deprivation (IMD) scores were used to assess socioeconomic associations.

Results:

TBI: 240 patients were identified; 15.4% had active TB and 85.4% were born outside the UK. Main referral pathways were new migrant screening (30.41%), occupational health (30%), and contact tracing (13.75%). Treatment rates differed by gender (men 78.1% vs women 61.6%, p=0.0079). Using global LTBI prevalence, an estimated 6,670 LTBI cases exist locally, 97% undiagnosed. Using UKHSA migrant screening prevalence, the undiagnosed fraction was 90.7%, compared with 92.7% when assessing only high-risk populations. At current rates of case entry into care, it would take 354 years to identify all TBI cases.

CHB: 248 patients were identified; 81% were born outside the UK. The largest groups were from Nigeria, Romania, and China (42% collectively). Treatment uptake was 35.9%, higher in men (45.7%) than women (25.2%, p=0.0012). Treatment rates increased with age (p=0.035), and longer UK residence was associated with higher age-adjusted treatment rates (14.1% higher in arrivals before 2010, CI 0.3–27.9, p=0.0034). Based on Polaris estimates, 767 non-UK-born residents were expected to have CHB, indicating 70.4% undiagnosed. At current rates, it would take 107 years to identify all CHB cases.

Both infections were positively correlated with an increase in deprivation.

Conclusions:

Integrating demographic, epidemiological, and geospatial data provides a robust method for estimating local undiagnosed infection burdens. In Hull and East Yorkshire, both TBI and CHB are substantially underdiagnosed, with marked disparities by country of birth, gender, and deprivation.

Current migrant screening thresholds may miss substantial numbers of cases. Targeted, postcode-level and country-of-birth-specific screening strategies may improve case detection.

Ciprofloxacin prophylaxis in allogeneic haematopoietic cell transplantation : a tale of two hospitals

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Background

Fluroquinolone prophylaxis during allogeneic haematopoietic cell transplantation (allo-HCT) is debated due to concerns regarding toxicity and antimicrobial resistance (AMR).

Methods

We compared clinical and microbiological outcomes of all adults undergoing their first allo-HCT for haematological malignancy at two large UK transplantation centres between January 2020 and December 2022. The centres employed differing prophylactic strategies: Site 1 administered ciprofloxacin prophylaxis; Site 2 did not.

Results

Among 343 eligible patients, comorbidities and allo-HCT indications between the two sites were broadly balanced. The most common indications were acute myeloid leukaemia (36.7%), acute lymphoblastic leukaemia (16.3%), myelodysplastic syndrome (11.1%). Bloodstream infections (BSIs) were less frequent at Site 1 (28.7%) than Site 2 (44.0%, $p < 0.001$), mainly due to fewer Gram-negative BSIs (15.3% vs. 31.6%, $p<0.001$). The rates of Gram-positive BSIs were similar between the sites (18.0% vs 15.0%). Multivariable analysis confirmed these findings (BSI odds ratio [OR] 4.06, 95% confidence interval [CI] 2.04–8.0; Gram-negative BSI OR 3.43, 95% CI 1.69–6.95).

Despite the increased incidence of BSI, the absence of ciprofloxacin prophylaxis in Site 2 was not associated with higher in-hospital mortality (7.3% at Site 1 vs. 3.6% at Site 2, p=0.15), or intensive care unit admissions (8.7% vs. 8.3%, p=>0.9), including in multivariable analysis (In-hsopital mortaility OR 0.60, 95% CI 0.18 – 2.08, ICU admission OR 1.19, 95% CI 0.43 – 3.30).

Enterobacterales BSIs at Site 1, where ciprofloxacin prophylaxis was routinely used, exhibited higher resistance rates to ciprofloxacin (73.7% vs 18.5%), piperacillin-tazobactam (63.2% vs. 16.7%), ceftriaxone (68.4% vs. 18.5%), meropenem (15.8% vs. 0%). Only 15 episodes of Pseudomonas aeruginosa bacteraemia were observed, causes by isolates predominantly susceptible to ciprofloxacin (93.3%, 14/15), with no differences between sites, including in multivariable analysis (OR 1.83, 95% CI 0.48 – 7). Overall antibiotic usage, including both prophylactic and treatment agents, was significantly higher at Site 1 ($p<0.001$).

Conclusions

Our findings indicate that ciprofloxacin prophylaxis was strongly associated with a reduced incidence of BSIs, particularly those caused by Gram-negative bacteria. However, this reduction did not correspond to improved patient outcomes in terms of mortality or ICU admissions. Conversely, the use of ciprofloxacin prophylaxis was associated with higher rates of AMR and with increased overall antibiotic utilization at the centre where it was implemented.

Staphylococcus aureus bacteraemia in patients with diabetes mellitus: analysis of patient characteristics and outcomes in a retrospective U.K. cohort study

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Introduction:
Diabetes mellitus is an increasingly prevalent comorbidity worldwide. We sought to test the hypothesis that diabetes would be associated with differences in the clinical characteristics and outcomes of Staphylococcus aureus bacteraemia (SAB).

Methods:
We conducted a retrospective cohort study of consecutive adults (≥18 years) with monomicrobial SAB, between 20/12/2019–31/5/2025, in Lothian, South East Scotland. Population data were obtained from Public Health Scotland. Pairwise comparisons, correlation analysis, logistic regression, and Kaplan-Meier analysis were used to compare people with and without diabetes. Diabetes was recorded as "diet-controlled", "uncomplicated", or "complicated" per the Charlson Comorbidity Index (CCI).

Results:
Amongst 986 people with SAB during the study period, 268 (27.18%) had diabetes (any CCI category). The incidence of SAB in Lothian was higher in people with diabetes (incidence rate ratio [IRR] 3.69, 95% CI 3.2-4.2), with the largest effect sizes amongst younger people (mean IRR=5.4 for 30–39-year-olds vs. 2.0 for ≥80-year-olds). People with "diet-controlled" diabetes had a median HbA1c below the diagnostic threshold for diabetes so were excluded from subsequent analyses.
People with diabetes were older (median 68 vs. 65y, $p<0.01$), more likely to be male (71.6% vs. 61.7%, $p=0.007$), had a higher BMI (median 28.9 vs. 25.4kg/m², $p<0.0001$), and a higher CCI (median 6 vs. 4, $p<0.0001$). Diabetes correlated with co-existent obesity, peripheral vascular disease, heart failure, myocardial infarction, and chronic kidney disease. Diabetes was associated with community-onset healthcare-associated SAB (33.1% vs. 22.7%, $p=0.002$). The portal of entry was more likely to be bone (15.3% vs. 2.1%, $p<0.0001$) or urinary tract (10.6% vs. 4.4%, $p<0.001$) amongst people with diabetes. Diabetic foot infections accounted for 11% of SAB cases among people with diabetes. Numerically, metastatic foci were identified less frequently in people with diabetes (19.5% vs 34.5%, $p<0.0001$). However, after adjustment for confounders, diabetes was not independently associated with presence or absence of metastatic infection (OR 0.82, 95% CI 0.51–1.32, $p=0.4$). Diabetes was not associated with differences in persistent bacteraemia (4.2% vs 4.8%, $p=0.9$) or 30-day mortality (20.8% vs 17.4%, log-rank $p=0.9$).

Discussion:
Diabetes is associated with an increased risk of SAB, especially in younger people, associated with community-onset healthcare-associated acquisition. The urinary tract and diabetic foot infections are important portals of entry in people with diabetes. Accordingly, urinary catheter and foot care in S. aureus-colonised people may be effective preventative strategies. Diabetes is not associated with worse outcomes in SAB.

Learning Objective:
Recognise how diabetes affects SAB incidence, characteristics and outcomes.

Evidence-informed emergency extraction protocols for high consequence infectious disease PPE: findings from a fluorescence-based simulation study

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Background
Donning and doffing protocols for High Consequence Infectious Disease (HCID) personal protective equipment (PPE) have been validated through fluorochrome visualisation and agreed through consensus. A recognised unmet need was consensus for an emergency extraction protocol of staff within the HCID centres when managing confirmed patients. As a network, we assessed our current protocols for both assessment PPE and MaxAir™ powered air-purifying respirator ensembles using a standardised fluorescence-based contamination model to produce consensus.

Methods
Six centre-submitted protocols (nine in total) were tested using a standardised exercise agreed within the HCID networks. Extractions were performed in a simulated clinical environment using ultraviolet tracers to quantify rescuer and casualty contamination pre- and post-doffing. Time to egress, contamination outcomes, participant and observer ratings (Likert-scored assessments of cognitive & physical load, safety, and usability) were recorded. Following initial testing, consensus protocols were developed, tested and approved.

Results
Nine protocols were evaluated. Consistent contamination loads were reproduced across scenarios, with typical patterns showing lower-body contact contamination and visor-level airborne deposition. Time to egress varied considerably. For MaxAir protocols, the median time to green-zone arrival was 9.1 minutes (IQR 8.5-17.1), with the refined consensus protocol achieving a time of 11.0 minutes. Assessment PPE protocols showed shorter times (median 7.2 minutes; IQR 5.1–9.1), although the consensus protocol required 12.5 minutes. Casualty contamination occurred in all Assessment PPE protocol and in one of three MaxAir protocols.

In contrast, both MaxAir and Assessment PPE consensus protocols achieved contamination-free extractions. Participant ratings indicated acceptable usability across protocols, with consensus versions showing improved perceived safety, and contamination control.

Conclusions
The recognised unmet need of consensus PPE ensemble for the assessment and PAPR have now been overcome with network agreement. Comparative testing enabled development of two consensus protocols that eliminated contamination in simulated conditions and were rated favourably for usability and safety. Although initially associated with longer extraction times, efficiency is expected to improve with training, and pragmatic adaptations may optimise performance. In time-critical emergencies, faster egress may be required, balancing need for urgent intervention against risk of casualty contamination.

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CD4+ T cell-induced macrophage death promotes Mycobacterium tuberculosis growth

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Background
The development of effective vaccines and host-directed therapies for tuberculosis remains limited by our incomplete understanding of how host immune responses to Mycobacterium tuberculosis (Mtb) mediate protection and pathogenesis. Macrophages both restrict Mtb and act as a niche for infection. While T cell-macrophage interactions are generally thought to augment macrophage control of mycobacterial growth, there is growing evidence that some T cell responses can drive tuberculosis pathology. It has been reported that Mtb reactive T cells are cytotoxic to Mtb infected macrophages but the underlying mechanisms and impact on Mtb growth are not fully understood. Importantly, different macrophage death programmes can have opposing effects on Mtb. We hypothesized that specific T cell-macrophage interactions drive distinct macrophage death programmes with differing effects on Mtb control.

Methods
We have developed and validated an in vitro model using human peripheral blood mononuclear cells (PBMC) and fluorescently labelled monocyte derived macrophages (MDMs) to quantify lymphocyte induced macrophage death via high content microscopy. We used fluorescently labelled Mtb and flow cytometry to quantify the effect of MDM death on Mtb growth.

Results
Mtb-stimulated PBMC induced antigen specific MDM death. PBMC-induced MDM death significantly increased Mtb growth and was dependent on MDM-PBMC contact. CD4+ T cells, CD8+ T cells and natural killer cells were each sufficient to induce MDM death but CD4+ T cells were the main drivers of Mtb growth. Single-cell RNA sequencing (scRNAseq) of Mtb-stimulated PBMC identified $CD4^+$ T cell expansion and increased expression of cytotoxic granule components as putative drivers of MDM death. Immunofluorescence microscopy and scRNAseq showed activation of apoptosis, necroptosis and pyroptosis in macrophages exposed to Mtb-stimulated PBMC. While inhibition of these pathways did not modulate MDM survival, inhibitors targeting certain caspases or MLKL (the necroptosis effector mixed lineage kinase domain like pseudokinase) reduced Mtb growth indicating MDM death programmes influence Mtb restriction.

Conclusion
Lymphocyte-induced macrophage death promotes Mtb growth and in so doing may contribute to tuberculosis pathology. Targeting specific death pathways to modulate this effect may offer new host-directed therapeutic strategies to augment host defence in tuberculosis.

Learning points
The observation that lymphocyte-induced macrophage death promotes Mtb growth challenges the canonical belief that T cell responses are protective in Mtb. Targeting the underlying mechanisms may offer opportunities for host-directed therapeutics and identifying pathogenic versus protective T cell responses may facilitate TB vaccine design.

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Quality Improvement Project to Reduce Central Line-Associated Bloodstream Infections (CLABSI) in the Intensive Care Unit of a Tertiary Care Teaching Hospital.

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Background:
A recent audit on Staphylococcus aureus bacteraemia revealed that approximately one-quarter of cases were associated with central lines—defined as central line-associated bloodstream infections (CLABSI). We also identified a lack of a standardized system within the Trust to track central line insertions, the responsible clinician, and associated complications such as infections. This prompted the initiation of a quality improvement project (QIP) to address these gaps.

Method:
We conducted three Plan-Do-Study-Act (PDSA) cycles to implement and evaluate targeted interventions.
PDSA Cycle 1:
Baseline data collection highlighted the need for improved documentation of line insertions and timely line removal. We held discussions with the ITU team to identify challenges and provided informal training sessions for junior doctors on central line care. Two CLABSI cases were recorded during this cycle.
PDSA Cycle 2:
We introduced an online line insertion form and continued junior doctor education. Nurses were also encouraged to ensure form completion at each insertion. Documentation improved, and again, two CLABSI cases were recorded.
PDSA Cycle 3:
A formal guideline on blood culture collection from central venous catheters (CVCs) was introduced, alongside ongoing education for junior doctors. No CLABSI cases were noted during this cycle.

Process Measure:
The percentage of ICU patients with central lines for whom a completed insertion form was available. At ICU/Infection Management meetings, we initiated routine checks for form completion to normalize this practice and address barriers.

Outcome Measure:
Reduction in CLABSI incidence in the Intensive Care Unit. As the insertion form became standard practice, it provided real-time data on CLABSI rates and helped guide further QI initiatives.

Balancing Measure:
A reduction in the number of patients discharged from Critical Care with central lines in situ.

Limitations and Further Recommendations:
- We were unable to determine the exact number of completed insertion forms, as the IT department was unable to retrieve this data.
- Although the project initially achieved a reduction in CLABSI, we carried out monitoring for 2 more months and a slight increase was observed during the team rotation period, possibly due to a combination of patient factors and inadequate training of new staff.
- This highlights the need for sustained training efforts with each staff rotation to maintain improvements.

- Additionally, the project facilitated more accurate reporting of CLABSI cases, as previously, every positive line culture was being automatically coded as a CLABSI due to the absence of a verification system.

Microbial diversity and antimicrobial susceptibility of tracheostomy tube biofilms isolated from mechanically ventilated patients in the intensive care unit or from patients with long-term

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Patients with tracheostomies are at risk of developing severe infection, including ventilator-associated pneumonia since tracheostomy tubes are prone to microbial colonisation through the formation of polymicrobial biofilms that adhere to the tube surface. Candida species, namely C. albicans, are known to play a role in early biofilm development and are involved in the recruitment of other pathogens and commensal bacteria to the biofilm. Candida species are also proposed to continue playing a structural role within biofilms even once dead in the form of “DNA fossils”.

With the aim of characterising the human tracheostomy microbiome, 102 tracheostomy tubes collected from patients at East Kent Hospitals University NHS Foundation Trust (EKHUFT) were subjected to microbial culture-dependent identification methodology followed by identification with MALDI-ToF and culture-independent 16S and 18S sequencing following whole genomic DNA extraction.

Both culture-dependent and -independent methods identified common biofilm-forming pathogens including Staphylococcus aureus, Pseudomonas aeruginosa and Enterobacterales species. Commensal species such as Staphylococcus epidermidis and Corynebacterium were also frequently identified by both methods. There were no major differences in antimicrobial susceptibility from previously reported studies. Candida species were identified in significantly more tubes by 18S sequencing than by culture-dependent methods ($p<0.005$), supporting the hypothesis of so-called “DNA fossils”.

These data corroborate the expected increased sensitivity of culture-independent methodology such as 16S and 18S sequencing over traditional culture-dependent methodology. These findings support the significant role of Candida species in biofilm formation and suggest a role for Corynebacterium species as a keystone species that was not previously targeted in tracheostomy tube biofilm development studies.

Modelling and characterisation of the Candida albicans and Corynebacterium striatum dual-species biofilm

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Candida and non-diphtheriae Corynebacterium species were identified from tracheostomy tube biofilms by both culture-dependent and –independent methodologies. The two most-frequently isolated of these genera being Candida albicans and Corynebacterium striatum. Both species are commensals of the human microbiota but have the capacity to become opportunistic pathogens in specific circumstances. The inter-Domain relationship within a dual-species biofilm of these two species was not previously characterised.

Microscopy, in vitro biofilm modelling, and infection modelling in Galleria mellonella were utilised to characterise the relationship between these two biofilm-residing organisms for the first time.

C. albicans and C. striatum were both confirmed as independently capable of producing a biofilm. An antagonistic growth relationship was observed in dual-species biofilms with growth promotion and antimicrobial protection for C. striatum compared with growth restriction and increased antifungal susceptibility for C. albicans. A possible role for C. striatum in the upregulation of C. albicans virulence by driving morphological switching from yeast to filamentation was identified, the initiation of which remains unclear.

These findings shine further light on the role of commensals within biofilm. They support previous (limited) observations of C. albicans and non-diphtheriae Corynebacterium species in biofilms and host infection models that suggest an antagonistic relationship exists between the two genera. However, the nature of the relationship, particularly with regards to the influence of C. albicans on the role of C. striatum as an opportunistic pathogen in these biofilms still remains unclear. Further work is required to identify the facilitators of adhesion between C. albicans and C. striatum and further characterise the role of C. albicans and polymicrobial biofilms more widely in the coloniser to pathogen switch in C. striatum infection.

Watching the CLOCC – a rare cause of lymphocytic meningitis

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Summary

We present the case of a rare neuroinflammatory complication triggered by rhinovirus infection, initially thought to be viral meningitis.

Case

A fit and well 39-year-old male gamekeeper was admitted with 7 days of fever, progressive headache and vomiting which followed an upper respiratory tract infection. His wife described episodes of disorientation, transient visual disturbances and confusion. On examination, he was globally hyperreflexic with significant neck stiffness and urinary retention necessitating catheterisation, despite intact power and sensation. He was treated for presumed meningoencephalitis with intravenous ceftriaxone and aciclovir.

Lumbar puncture revealed an opening pressure greater than 40cm/Hg with a lymphocytic CSF and raised protein. A throat swab was positive for rhinovirus by PCR. Multiplex viral PCR on CSF was negative, including further PCR specifically for rhinovirus.

Given his abnormal neurology, an MRI brain with contrast was performed, demonstrating signal changes within the splenium of the corpus collosum in keeping with a cytotoxic lesion of the corpus callosum (CLOCC).

Antimicrobials were discontinued after 3 days. The patient gradually recovered without need for steroids or other immunomodulatory treatment. Further lumbar puncture showed a normalised opening pressure and a falling CSF white cell count and repeat MRI brain on day 6 demonstrated improving CLOCC. His catheter was successfully removed on day 8, he was discharged home on day 10.

At follow-up 2 months later, despite experiencing ongoing fatigue, the patient had no lasting neurological sequelae.

Learning points

CLOCC is a recognised neuroinflammatory process affecting the splenium of the corpus callosum with typically round, ovoid or boomerang shaped lesions seen on MRI brain. It is typically an inflammatory para-infectious process; however, cases related to direct CNS infection have been seen.

Infection is the most common cause of CLOCC in children and second most common in adults, although a broad range of other aetiologies are described. Viruses (particularly Influenza) are the most common infectious precipitant; other bacterial and plasmodial infections have also been reported.

Clinicians should be aware of the atypical presenting features which may point away from a simple viral meningitis, such as this patient's hyperreflexia, urinary retention and high CSF opening pressure prompting neuroimaging. Prognosis is generally favourable, with most cases associated with a spontaneous full neurological recovery.

Specific treatment is typically not required for CLOCC, although steroids have been used in some cases. Imaging changes typically resolve within 2 weeks, though may persist for longer in a minority of patients.

Inflight Texan fever

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49m presented to A&E with a five-day history of malaise and fever which started inflight from USA.

History:
Rash started three days ago on torso and arms, no raised lesions, no skin breaks, no blistering. Non-productive cough for one day.
No diarrhoea. Vomited once. No dysuria. No joint pain /swelling. Mild headache, relieved with paracetamol. No photophobia /neck stiffness.
PMHx: Ear infection with lymphadenopathy 3 weeks prior.
DHx: Topical antifungal for ear infection. Nil else.
SHx: Born in Newcastle, UK, moved to Texas 20y ago. Lives with female partner, no other sexual contacts. Has a dog. Ate mackerel just before vomiting. No contact with freshwater, sewage, livestock or unpasteurised dairy products. Fully vaccinated. Neighbours had a rat problem recently. No flea bites.

Examination: Temperature 39.9, HR118. Cardiovascular, respiratory and abdominal examination normal. No lymphadenopathy. No spinal tenderness. Rash no longer visible. Throat normal. Tympanic membranes intact bilaterally.

Results
Cr 78, CRP 171, Bili 30, ALP 188, ALT 172, Ferritin 4728
Hb 135, pl 77, wcc 4.54, neut 3.68, Lymph 0.55, eosin 0.01
Malaria screen-negative
IM screening-negative
Negative respiratory screen (Flu A&B, RSV, Parainfluenza, Adenovirus, Chlamydiophilia pneumonia)
CT CAP: Trace right sided pleural effusion, borderline splenomegaly, no ascites
EBNA positive, CMV IgM negative
HIV, Hep A-E negative

Diagnosis: After the patient had left to return to USA, RIPL results came back Epidemic Typhus Group IgM Ab weak positive, IgG Ab negative (Leptospira & Spotted Fever negative). This case of murine typhus was treated with doxycycline per guidelines.

Conclusion: Patients may not remember a flea bite and symptoms are non-specific. Take a detailed history and consider epidemiological risk.

Antimicrobial stewardship in extreme preterm neonates: Evaluating and optimising late-onset sepsis antibiotic guidelines

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Background
Antimicrobial stewardship is essential in extreme preterm care to balance effective infection control with microbiome preservation. This multidisciplinary QI project aimed to benchmark our local late onset sepsis (LONS) antimicrobial protocol (piperacillin-tazobactam and vancomycin) against national practice, assess local microbiology and susceptibility patterns, and evaluate opportunities to optimise empirical antibiotic recommendations.

Methods
A national survey of LONS guidelines was circulated to UK level 3 NICUs in February 2022 and in June 2022. All positive blood cultures (January 2022–February 2024) across our Trust's two NNUs (one Level 2 and one Level 3) were reviewed. A prospective audit of LONS treatment episodes was conducted from November 2024–April 2025.

Results
Fifteen centres responded to our survey. For LONS without central access, 73% (11/15) used flucloxacillin and gentamicin. In the presence of central access, regimens varied: 33% (5/15) used cephalosporin and vancomycin, 26% (4/15) used flucloxacillin and gentamicin, and 20% (3/15) used piperacillin-tazobactam and vancomycin.

Through our retrospective and prospective reviews, 90 bacteraemic episodes were identified (median gestational age 24 weeks). Staphylococcus capitis was the commonest isolated organism (39/90, 43%), mostly in infants without central venous access. Flucloxacillin and gentamicin resistance among S. capitis were 18% and 13% respectively, making this antibiotic combination an inappropriate second-line choice. Cephalosporin resistance overall was rare (n=2: ESBL-producing Klebsiella pneumoniae and E. coli).

Notably, 33/90 (37%) episodes escalated to meropenem, including 13/15 (87%) of all Gram-negative bacteraemia. Vancomycin levels were sub- or supratherapeutic in 49% and 53% of cases, respectively, supporting a prospective change in our guidelines from intermittent to continuous infusions.

Conclusions
UK NICU LONS protocols vary widely. Local susceptibility data support continued broad-spectrum cover in the absence of central access, but suggest de-escalation from tazocin to a cephalosporin is feasible. High meropenem use in Gram-negative infections and variable vancomycin levels further inform stewardship priorities.

The importance of source control: a relapsing remitting fever in a male with a long-standing pacemaker

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Case: A 60-year-old male with a pacemaker, inserted 15 years prior for dilated cardiomyopathy, presented with fevers and rigors in September 2024 with intermittent periods of wellness. Between January and April 2025, he had multiple hospital presentations with transient non-specific symptoms and raised inflammatory markers.

Investigations and management: In January 2025, he clinically improved with a 5-day course of amoxicillin. Blood cultures at this time grew Staphylococcus epidermidis, felt to represent contamination. From March 2025, he completed three weeks of antibiotics for episodes of fever, rigors and raised CRP, with three blood cultures growing Staphylococcus epidermidis. In April 2025 he had a negative transthoracic echocardiogram (TTE). An initial PET-CT was concluded to be normal, reporting only low-grade uptake around coiled leads. Device-associated infective endocarditis (IE) was therefore felt to be of low likelihood. Symptoms recurred in August 2025, and device-related infection was again considered. Transoesophageal echocardiogram (TOE) showed a small mobile vegetation on the right atrial lead. Repeat PET-CT in September 2025 showed new low-grade uptake along intracardiac pacemaker leads, concerning for device infection.

The patient deteriorated despite antibiotic therapy and required transfer to a cardiac centre for complete pacemaker and lead extraction. This was complicated by septic arterial embolisation with Klebsiella pneumoniae bacteremia, requiring a 5-day intensive care admission. Re-implantation was not required, and the patient remained clinically well after extraction.

Discussion:
Staphylococcus epidermidis, a coagulase-negative Staphylococcus (CoNS), accounts for 17-26% of cardiac device-related infective endocarditis (1,2). CoNS bacteraemias often follow an indolent course and may be interpreted as contaminants, leading to diagnostic delay in endocarditis diagnosis (1). Clinical signs, inflammatory markers and TTE have low sensitivity in detecting cardiac device lead-related infection (3). 2023 ESC guidelines emphasise early and repeat TOE, multidisciplinary input and adjunctive imaging such as PET-CT. Definitive management often requires system and lead extraction, which carries procedural risk. Prolonged antibiotic therapy is a less invasive alternative but is less effective in eradicating the infection source(4).

Conclusion:
This case highlights i) The morbidity risk associated with delayed diagnosis of cardiac device related IE; ii) The clinical challenge of weighing up the relative likelihood of IE with the risk of its extraction; iii) The clinical significance of recurrent CoNS (skin flora organisms) bacteremia in patients with a cardiac device; iv) Clinical effectiveness of investigations (TOE and PET/CT) with an MDT approach and v) The need for further research on pathogen/disease specific blood biomarkers.

Infliximab treatment of inflammatory tuberculous meningitis: Comparing reactions in two patients, living with HIV and without HIV.

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Infliximab treatment of inflammatory tuberculous meningitis: Comparing reactions in two patients living with HIV and without HIV.

Background:
Inflammatory intracerebral reactions develop in approximately 20% of cases of tuberculosis meningitis (TBM), but this is greater than 30% in people living with HIV (PLWHIV). First-line management is corticosteroids. Case-based studies show increasing use of anti-tumour necrosis factor (anti-TNF) in steroid failure.

Case Description:

Case1:
56-year-old presented with 6 months cough, weight loss, headaches and confusion.

HIV diagnosed at presentation (CD4:121cells/mm3).
MRI brain: tuberculomas.
CT thorax: miliary TB.
Bronchoalveolar lavage culture: drug sensitive Mycobacterium tuberculosis (MTB).
Brain biopsy: MTB PCR positive.

Standard TB therapy with dexamethasone was commenced, and antiretrovirals were delayed by 4 weeks.
Three readmissions revealed progression of tuberculomas despite increasing steroids, with new hydrocephalus identified on third readmission.
Infliximab was commenced 7 months following initial diagnosis (4 inpatient doses over 10-weeks, followed by monthly outpatient doses).
Hydrocephalus resolved after 3 months of infliximab but surrounding oedema persisted until 12 months.
At 18 months monthly outpatient infliximab continues (without side-effects), steroids weaned and TB treatment completed. Recovery was delayed by deconditioning, and mild functional impairment persists.

Case 2:
22-year-old presented with three-weeks behavioural change, fever and weight loss.

Bronchoalveolar lavage: drug sensitive Mycobacterium tuberculosis (MTB) on culture.
CSF: MTB PCR positive
Diagnosed miliary TB with TBM and tuberculomas, spinal and visceral disease.

Standard TB therapy and dexamethasone was commenced. Despite initial improvement, he subsequently developed headaches, and seizures, with worsening radiological appearances, despite increasing steroid doses.
Infliximab was commenced 6 weeks following initial diagnosis in view of steroid resistant paradoxical reaction.

Three doses of infliximab were given in the UK with good clinical improvement and no side-effects, before returning to their home country for a final fourth dose at 8 weeks.

Discussion:
These cases add to the literature on use of anti-TNF in TBM inflammatory reactions in patients living with, and without, HIV. In both instances anti-TNF was well tolerated without adverse effects.

Case 1, a patient living with HIV, required significantly longer infliximab course than case 2 (HIV negative).
There is a lack of evidence when to stop anti-TNF in these cases.

With more experience using anti-TNF, would earlier treatment have prevented the multiple deteriorations of case 1, or did this relate to his HIV disease?

A case of classical meningitis with Fusobacterium nucleatum in a healthy child

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Introduction:

Anaerobes are a rare cause of acute bacterial meningitis. Infections of the central nervous system (CNS) secondary to Fusobacterium nucleatum are extremely rare in children with severely limited data reported in the literature. We present the case of a confirmed Fusobacterium nucleatum meningitis in a previously health child.

Case:

A fully vaccinated 7-year-old boy with no past medical history presented to hospital with a history of fevers, headaches, photophobia, neck stiffness, episodes of vomiting and reduced consciousness level, being only responsive to pain on admission. C-reactive protein on admission was 177 mg/L, with a normal serum white cell count and raised lactate of 4.9 mmol/L. The patient was managed for acute bacterial meningitis on intravenous (IV) cefotaxime, metronidazole and acyclovir, along with steroids. Computed tomography (CT) head suggested opacification of the mastoid airspace, with subsequent magnetic resonance imaging (MRI) of the head being normal. Subsequent lumbar puncture done after 24 hours of treatment highlighted a significantly raised white cell count (4840 cells per cu.mm, 92% polymorphs) with a gram-negative bacillus on gram-stain. BioFire meningitis polymerase chain reaction (PCR) panel, blood culture, nasal swabs (viral and bacterial) were negative, with negative serum meningococcal and pneumococcal PCR

Cerebrospinal fluid culture failed to grow following standard culture methods as per the UK Standards of microbiology Investigations (SMI) with the sample being sent for 16S PCR. PCR diagnosed Fusobacterium nucleatum. The patient improved with no complications on 21 days of IV ceftriaxone, later being discharged on ambulatory IV antibiotics, and continues to do well 6 months post infection.

Conclusion

Meningitis secondary to anaerobic bacteria account for only a minute fraction of bacterial meningitis, usually in immunocompromised patients. This case highlights a rare cause of CNS infection by F. nucleatum in an otherwise healthy child and the need for molecular diagnostic methods such as PCR to complement traditional culture methods in the diagnosis of rare and unusual organisms.

Investigating Manual Reading of SensititreYeastOne assays for Antifungal Susceptibility Testing.

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Introduction: Antifungal susceptibility testing (AFST) is crucial for guiding the management of yeast infections; however, not all laboratories have the resources for full automation. Our primary aim was to calculate the agreement of the minimum inhibitory concentration (MIC) values obtained by each reader using manual SensititreYeastOne assays. Our secondary aim was to determine the susceptibility of clinical Nakaseomyces glabratus isolates from our centre using manual SensititreYeastOne assays.

Methods:
The MICs of 25 yeast isolates (C.albicans (n=7), N.glabratus (n= 13), C.parapsilosis (n=1), C.lusitaniae (n=2), N.nivariensis (n=2) and non-Candida (n=3)) from 25 episodes of candidemia at Addenbrooke's Hospital, Cambridge, were determined using
SensititreYeastOne YO10 plates. Five control organisms were used; these were NCPF: 03939(C.albicans), 08977(C.auris), 03864(C.parapsilosis), 03876(C.krusei) and 03111(C.tropicalis). We performed AFST on SensititreYeastOne YO10 plates (five tests per control) and ITAMYUCC plates (five tests per control). Each plate tested the isolate against nine antifungals. Two individuals independently read the results after 24h. We calculated the essential (EA, within two doubling dilutions) and categorical (CA, susceptible/resistant) agreements between the MIC values obtained by each reader.

Results:
For clinical isolates, the EA and CA between the two readers were 98.7% (222/225) and 94.5% (103/109). An EA of 96.8% (61/63) and CA of 96.6% (57/59) for C.albicans, an EA of 99.2% (116/117) and CA of 93.0% (53/57) for N.glabratus, an EA of 100% (9/9) and CA of 100% (7/7) for C.parapsilosis, and an EA of 100% (18/18) for C.lusitaniae and N.nivariensis. For control strains, the EA and CA between the two readers were 99.0% (445/450) and 96.3% (234/243). An EA of 97.8% (88/90) and CA of 94.2% (65/69) for C.albicans, an EA of 97.8% (88/90) for C.auris, an EA of 100% (90/90) and CA of 100% (20/20) for C.krusei, an EA of 99.0% (89/90) and CA of 100% (80/80) for C.parapsilosis, and an EA of 100% (90/90) and CA of 95.7% (67/70). All clinical isolates of N.glabratus (n=13) were susceptible to Amphotericin-B and Caspofungin; all except one (MIC=0.06µg/ml) were susceptible to Micafungin, and 7/13 (53.8%) were susceptible to Anidulafungin. Five of 13 (38.5%) N.glabratus isolates were resistant to Fluconazole, while 8/13 (61.5%) were susceptible with increased dosage.

Discussion:
Despite the subjectivity, while reading results in the manual version of the SensititreYeastOne assay, there is good essential and categorical agreement of results obtained by two independent readers. We recommend a control colour scale to aid in reading the results, which could further reduce any subjectiveness.

The Research of The Antibacterial Effects of Pollen and Propolis, Q-Dots, and Antibiotics

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Title

The Research of The Antibacterial Effects of Pollen and Propolis, Q-Dots, and Antibiotics

Background

The rapid emergence of multidrug-resistant Gram-negative bacteria, particularly Acinetobacter baumannii and Klebsiella pneumoniae, represents a major global health concern. Natural products such as propolis and bee pollen have been widely studied for their antimicrobial properties. In recent years, nanotechnology-based approaches, including quantum dots (Q-dots), have gained attention due to their unique physicochemical and potential antimicrobial properties. However, the antibacterial efficacy of Q-dots synthesized from natural sources remains insufficiently explored, particularly against clinically relevant Gram-negative pathogens.

Aim

This study aimed to synthesize quantum dots from propolis and pollen using a microwave-assisted method and to evaluate their in vitro antibacterial activity against A. baumannii and K. pneumoniae using the agar well-diffusion method.

Methods

Propolis and pollen were prepared in aqueous solutions and subjected to microwave-assisted synthesis (160 °C, 20 minutes) to obtain Q-dots. The resulting solutions were filtered through a 0.22 µm membrane. Clinical isolates of A. baumannii and K. pneumoniae were purified, Gram-stained, and cultured in Mueller–Hinton media. Agar well-diffusion assays were performed by applying raw propolis, raw pollen, propolis-derived Q-dots, pollen-derived Q-dots, and reference antibiotics (ceftazidime, cefotaxime, imipenem). Plates were incubated at 37 °C for 24 hours, and inhibition zones were measured.

Results

Neither pollen nor pollen-derived Q-dots demonstrated antibacterial activity against the tested strains. Propolis exhibited only minimal inhibitory effects. In contrast, the reference antibiotics showed clear antibacterial activity against both pathogens.

Conclusion

The findings suggest that aqueous extracts of propolis and pollen, as well as their derived Q-dots, may have limited efficacy against Gram-negative bacteria. Factors such as extraction solvent, geographical origin, and intrinsic resistance mechanisms of Gram-negative pathogens may influence the observed outcomes. Further studies involving different solvents and synthesis parameters are warranted.

Learning Objectives

To understand the potential and limitations of natural product-derived quantum dots as antimicrobial agents.

To evaluate in vitro antibacterial activity using the agar well-diffusion method.

To recognize factors influencing antimicrobial efficacy against Gram-negative pathogens.

Confirmed Lyme Neuroborreliosis and Tick-Borne Encephalitis Virus Co-infection Presenting with Severe Multifocal Neurological Involvement in the UK

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Background:
Co-infection with Lyme neuroborreliosis and tick-borne encephalitis virus (TBEV) is rare but increasingly recognised in areas where tick habitats are expanding. Dual infection may result in more severe or atypical neurological presentations compared with either pathogen alone. Lyme neuroborreliosis classically manifests with cranial neuropathies, radiculopathy, or lymphocytic meningitis, whereas TBEV more commonly presents with meningitis or encephalitis, occasionally with myelitis or brainstem involvement.

Case presentation:
We describe one of the first confirmed UK cases of Lyme neuroborreliosis and TBEV co-infection in a previously independent man in his 50s from the East of England. He presented with subacute bulbar weakness, dysarthria and gait ataxia, preceded by a 1–2 week prodrome of myalgia and fatigue. Neurological examination demonstrated multiple cranial neuropathies and lower motor neurone deficits affecting the right upper limb, consistent with cervical radiculopathy. Magnetic resonance imaging showed inflammatory changes consistent with encephalitis. Serological testing confirmed acute Borrelia burgdorferi infection, and TBEV RNA was detected on molecular testing, establishing co-infection.

Clinical course and outcome:
The patient was treated with intravenous ceftriaxone for Lyme neuroborreliosis. His clinical course was complicated by deterioration in conscious level and behavioural disturbance, necessitating intensive care unit admission. Although gradual neurological improvement occurred, recovery was protracted, requiring 2.5 months of inpatient care followed by specialist neurorehabilitation. At two-year follow-up, residual cranial neuropathies, cervical radiculopathy and persistent right upper limb weakness remained, with only partial functional recovery.

Conclusion:
This case highlights the diagnostic complexity of recognising tick-borne co-infection in regions where TBE has not historically been considered endemic. The overlapping yet distinct neurological manifestations of Lyme neuroborreliosis and TBEV may delay diagnosis and complicate management. As tick-borne pathogens expand geographically within the UK, clinicians should maintain a high index of suspicion for co-infection in patients presenting with multifocal neurological deficits following a compatible prodrome. Early recognition and coordinated multidisciplinary management are essential to mitigate long-term neurological morbidity.

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Streptococcus agalactiae meningitis in a diabetic middle-aged woman

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Introduction

Streptococcus agalactiae (Group B Streptococcus, GBS) is a well-established cause of neonatal meningitis. In comparison, GBS meningitis in adults is far less common, accounting for only 1.3% of culture-positive cases. Studies have demonstrated an increased incidence among immunocompromised individuals, including those with diabetes mellitus. We report a unique case of GBS meningitis in a patient with diabetes mellitus, emphasizing the diagnostic challenges and management considerations specific to this population.

Case Presentation

Our patient is a woman in her fifties who presented with altered behaviour and fever for the past three days. Her past medical history was significant for hypertension and diabetes but she was previously fit and independent. Initial examination revealed a fluctuating Glasgow Coma Scale (GCS) between 11 (E3V3M5) and 13 (E4V4M5) and reduced power in the lower limbs. Investigations revealed leucocytosis alongside metabolic acidosis, acute kidney injury and biochemical evidence of hyperosmolar hyperglycaemic state. A contrast-enhanced CT head revealed no acute abnormality however lumbar puncture showed lymphocytic pleocytosis, elevated protein and low glucose upon cerebrospinal fluid (CSF) analysis. Our patient's clinical presentation and investigation findings are suggestive of an intracranial infection warranting empirical treatment - intravenous ceftriaxone and acyclovir. CSF culture showed no growth but CSF meningitis/encephalitis panel using Qiagen multiplex PCR subsequently detected Streptococcus agalactiae. Antibiotics were immediately switched to intravenous benzylpenicillin following confirmation of GBS with adjunctive intravenous dexamethasone. Her admission was further complicated by GCS deterioration and renal failure necessitating endotracheal intubation with ventilation and intermittent haemodialysis in the intensive care unit. After five weeks of hospitalisation, she showed marked improvement and was subsequently discharged with plans for outpatient follow-up.

Discussion

GBS meningitis may present atypically despite common symptoms of headache, fever, neck stiffness and altered mental status, including having a lymphocytic CSF profile. Therefore, complementary usage of blood and CSF cultures alongside CSF PCR is recommended to improve GBS detection. Penicillin G remains the treatment of choice for GBS meningitis, with other beta-lactam antibiotics being effective alternatives. The typical duration of therapy is 2-3 weeks, depending on the presence of infectious complications. Most cases reported in literature have favourable outcomes, with an age above 65 years, cardiorespiratory failure, infective endocarditis and neurological complications being poor prognostic factors.

Conclusion

This case highlights Streptococcus agalactiae as a rare but important cause of adult meningitis, particularly in patients with medical comorbidities. Early use of molecular diagnostics should be considered when CSF cultures are negative.

Maternal Varicella in the Immediate Postpartum Period Despite Documented Immunity: Implications for Neonatal Risk Assessment

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Learning Objectives:

By the end of this presentation, participants will be able to:
1. Recognise the limitations of VZV IgG as a marker of protective immunity.
2. Apply UKHSA guidance to neonatal post-exposure prophylaxis in peripartum exposure.
3. Appraise the practical considerations influencing time-critical decision-making when definitive serological results are pending.

Background:

Peripartum varicella exposure carries significant neonatal risk. UKHSA guidance provides clear recommendations for neonates whose mothers develop chickenpox within seven days before or after delivery. In practice, uncertainty may arise when maternal history and serology appear reassuring.

Case history:

A term neonate (41+2 weeks) was delivered by Caesarean section and required respiratory support for suspected pneumonitis. On day one postpartum, the mother developed a vesicular rash clinically consistent with varicella. She was born and raised in India, relocating to the UK eight years prior to presentation, and reported a history of childhood chickenpox. She was otherwise immunocompetent. Stored antenatal booking bloods were requested for VZV IgG testing, but results were not immediately available.

Given the peripartum timing, neonatal respiratory concerns, and pending serology, a precautionary approach was taken. Empirical aciclovir was commenced in the neonate. Following discussion with the on-call consultant virologist and UKHSA, intravenous varicella immunoglobulin was administered prior to antibody confirmation. Maternal lesion PCR subsequently confirmed VZV DNA. Booking serology later returned positive for VZV IgG (257 mIU/mL). Further history revealed that one of the mother's children had developed chickenpox approximately two weeks prior to delivery, suggesting recent household re-exposure.

Discussion:

VZV epidemiology differs between temperate and tropical regions, with variation in age of primary infection and patterns of exposure. While detectable IgG generally indicates immunity, it does not completely exclude active infection. In high-risk neonatal exposures, management decisions may need to precede laboratory confirmation. Early specialist input and multidisciplinary discussion were central to safe care.

Conclusion:

Peripartum varicella exposure requires careful clinical judgement. When uncertainty exists, timely risk stratification and precautionary treatment may be appropriate, even in the presence of documented maternal immunity.

‘Diagnostic Challenges in Suspected Neurosurgical Infection: A Retrospective Single Centre Review’

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Background:
The diagnosis of neurosurgical infections, such as post-neurosurgical bacterial meningitis, or healthcare-associated ventriculitis is challenging. Post-operative inflammatory changes, underlying neurologic disease, and invasive devices such as external ventricular drains may all trigger biochemical and physiological responses that mimic infection. Clinical features can be non-specific: fever, headache, reduced consciousness, and raised inflammatory markers frequently occur even in the absence of true infection. The aim of this review was to assess the relationship between clinical features, cerebrospinal fluid (CSF) indices, and systemic inflammatory markers in neurosurgical patients.

Methods:
We conducted a retrospective review of 89 CSF samples obtained from 45 patients admitted under the neurosurgical service at Cork University Hospital, Ireland between January and October 2025. Clinical parameters at the time of CSF sampling were evaluated, including symptoms suggestive of infection: fever, headache, reduced Glasgow Coma Scale (GCS), or evidence of surgical site infection. Biochemical parameters analysed included CSF white cell count (WCC); blood WCC and serum C-reactive protein (CRP), obtained within 24 hours of CSF sampling. Case notes for each case were reviewed to determine whether the Clinical Microbiology Team had classified the episode as a neurosurgical infection at the time of sampling.

Results:
Of the 89 samples reviewed, 45 (50.5%) were taken from patients ultimately deemed not to have neurosurgical infection. Of these, seven (15.6%) demonstrated an elevated CSF WCC, while 30 (66.7%) had normal CSF WCC and eight (17.8%) were unsuitable for cell count analysis. Serum CRP was available in 37 of the 45 cases. Of these, 20 (54%) showed elevated CRP levels, despite the absence of infection; 17 (46%) had normal CRP values. Blood WCC was raised in six samples (13.3%), normal in 34 (75.6%) and not performed in five (11.1%).

Clinically, 17 cases (37.8%) presented with symptoms consistent with infection, including headache, reduced GCS, localised postoperative pain or discharge at the surgical site. Six patients (13.3%) were febrile at the time of sampling.

Conclusion:
This review highlights the significant diagnostic complexity associated with suspected neurosurgical infection. A substantial proportion of patients deemed not to have true neurosurgical infection exhibited raised inflammatory markers or symptoms suggestive of infection. This overlap between postoperative or neurological presentations and infection-like features contributes to diagnostic uncertainty, which can lead to unnecessary broad-spectrum antimicrobial therapy. These findings reinforce that diagnosis of neurosurgical infection should not rely on isolated CSF or clinical parameters, but instead requires clinical judgement incorporating the broader patient context.

When the epidemiology doesn't fit: fever in a pair of travellers returning from a non-endemic area

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Case presentation

A married man (45) and woman (38), originally from Bangladesh, but resident in the UK for over 20 years, presented one day apart with a 10-day history of fevers, rigors, profuse sweating, myalgia, cough, and headache. Symptom onset occurred 15 days after returning from a one-week holiday to Side, Türkiye, where they stayed in a hotel, consumed hotel food and bottled water, and recalled no insect bites or animal exposures. On the second day of travel, their 13-year old son became unwell and died with a provisional diagnosis of sepsis; post-mortem was inconclusive. Their two other children remained well.

Both adults were unwell with fever, tachycardia, tachypnoea, and clammy peripheries, without other focal findings. Initial investigations demonstrated thrombocytopenia, lymphopenia, and elevated CRP (peak >300mg/L). Additional abnormalities included acute kidney injury and hyponatraemia in the male and anaemia with transaminitis in the female. Blood-borne virus screen, chest radiograph, blood/urine cultures, and respiratory viral PCR were unremarkable.

Malaria antigen was detected in both cases. Blood films were reported as probable Plasmodium vivax, but subsequently identified as Plasmodium malariae by the UK Malaria Reference Laboratory, with all parasitic stages present and low cycle threshold values. Both patients received intravenous artesunate and ceftriaxone, followed by artemether-lumefantrine, and made a full clinical recovery. Malaria was considered an unlikely cause of their son's death.

Public health

P. malariae is found globally1, and can cause chronic infection with asymptomatic carriage. Severe malaria occurs in ~3% of P. malariae cases2. Türkiye eliminated malaria in 2012 but remains the only country in the WHO European Region that is not certified malaria-free3.

A cryptic malaria investigation was initiated. Recrudescence of prior infection was thought unlikely given the simultaneous presentation in both patients. Although the couple had travelled to Heathrow airport 2 months earlier, recent entomological surveillance had not identified Anopheles species, making airport-associated transmission less probable.

The incubation period and timing of illness were felt consistent with vectorial transmission within Türkiye, where malaria was historically endemic4, and the Anopheles sacharovi vector remains abundant5. Recently reported cases of non-imported malaria in Türkiye were caused by P. falciparum and ovale, but none by P. malariae6.

Discussion

These cases highlight the limitations of contemporary endemicity classifications when assessing malaria risk. The cases highlight the importance of integrating clinical reasoning with historical epidemiology and entomological data, and underscore the need for ongoing surveillance in regions with ecological conditions permissive to malaria re-emergence.

Extensively Drug Resistant (XDR) Pseudomonas aeruginosa in a stoney urinary tract

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Background: The number of infections caused by multi-drug resistant organisms is on the rise globally. These infections add an extra layer of complication especially in patients with complex medical histories. P. aeruginosa is a Gram-negative bacterium known for causing complicated urine infections especially in patients who have had urologic manipulation or obstructive uropathy. This case highlights the complex medical management required for patients with an XDR, Extensively Drug Resistant, P. aeruginosa infection.

Case description:
In August 2025 a 34-year-old male patient presented to A+E complaining of worsening left sided abdominal pain radiating to the groin and testicles and an increased urinary urge with incontinence. A CT scan was performed which showed a stone in the left proximal ureter. This patient has a past medical history of recurrent renal stones where treatment had been performed in both Belgium and Pakistan. This patient had previously been admitted within the UK however did not complete the prescribed antibiotic course – patient self discharged.
Upon admission the patient was diagnosed with left ureteric colic, and a stent was inserted into their left kidney – frank pus was noted during insertion. After initial improvement the patient started to deteriorate on day two of admission. A urine sample was sent for culture, and the patient was started on broad spectrum IV antibiotics.
The urine grew an XDR Pseudomonas aeruginosa which greatly reduced the antibiotics available for treatment and required additional antibiotic sensitivity work up. Due to the complexity of this case, it was presented at a national MDT to discuss potential treatment options. Treatment was limited to source control, removal of stent and specialist urology referral, with the potential use of IV fosfomycin and colistin should the patient present with sepsis.
Discussion:
With limited effective antimicrobial treatments available for the treatment of XDR P.aeruginosa these infections present healthcare professionals with a challenge.
As the incidence of antimicrobial resistance increases globally these patients will become much more common. Treatment using combination, and synergistic antibiotics with definitive source control may be an option however this will require good antibiotic stewardship and sharing of best practice.

Improving rates of adherence to the UKHSA 2023 guideline on intravenous to oral switch of antibiotics amongst four medical and surgical wards at Barnsley District General Hospital

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Introduction

IV to oral antibiotic switch (IVOS) has been highlighted as a cornerstone of antimicrobial stewardship by NICE and CQUIN reports whilst reducing complications associated with peripheral intravenous access, improving inpatients' mobility and reducing time to discharge. Appropriate IVOS also confers health system benefits including liberated nursing time and equipment cost rationalisation.

CQUIN data indicate that a higher proportion of patients at Barnsley Hospital remain on IV antibiotics longer than necessary, when compared nationally. Previous quality improvement work has focused on reducing IV antibiotic associated health system costs, rather than improving rates of appropriate IVOS according to audit standards. Therefore, our aim was to conduct a two-cycle quality improvement project to increase adherence to UKHSA guidance 48-hours post IV antibiotic initiation to above 90% across four medical and surgical wards at Barnsley Hospital by December 2025. Additionally, we assessed the proportion of patients whose IV antibiotic therapy was reviewed within 48-hours post initiation and establish where practice deviated from UKHSA guidance.

Methods

Between 13th October and 21st December 2025 189 patients were evaluated across three assessment periods, interspersed with two interventions. The first was a series of targeted teaching sessions delivered to medical and nursing staff highlighting the importance of appropriate IVOS alongside an 'ACED' mnemonic poster campaign to help recall IVOS indications. Following this clinical teams were encouraged to review a ward list of patients on IV antibiotics generated by the 'IRIS' intranet tool during board rounds, in order to more easily identify patients that may be appropriate for IVOS.

Results

Unfortunately, there was no significant improvement to the rates of appropriate IV antibiotic management 48-hours post initiation with adherence to UKHSA criteria being 82.9%, 83.1% and 80.0% respectively across the three assessment periods. Rates of antibiotic therapies being reviewed within 48-hours of initiation had only marginally improved by the final assessment period with adherence being 86.7%, 79.41% and 89.1% respectively. For patients not appropriately managed at 48-hours, the predominant issue was incomplete clinical assessment. This was most commonly due to missing inflammatory markers or lack of 48-hour review, particularly at weekends, suggesting workflow and staffing related barriers rather than knowledge deficits alone

Conclusion

This two-cycle quality improvement project highlights the difficulty of a small project team engendering change in IV antibiotic management across multiple wards and specialities. Future projects should aim to focus initial efforts in improving rates of appropriate IVOS amongst a smaller number of clinical teams.

Sporadic Listeriosis with prosthetic joint infection in a semi-retired farmer

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We present a case of Listeriosis with prosthetic joint infection in a 79 year-old farmer who resides in a multi-generational setting on the family farm and partakes in the care of the family's horses daily despite being ostensibly retired from farming.

The patient had been feeling severely fatigued for 3 or more months with multiple episodes of uncontrollable shivering daily and 3kg weight loss. They were receiving long-term prednisolone for treatment of Polymyalgia rheumatica which was recently up-titrated to 15mg to address systemic inflammation on blood tests. Whilst awaiting interval retesting of bloods the patient developed excruciating, sudden-onset pain in their right hip (site of a total hip replacement 15 years ago) and they were referred by their GP for assessment and self-presented via ED.

On arrival they were visibly rigoring with a fever. Initial results included a CRP of 251; WCC 12.9 and slightly deranged renal function; initial samples included a blood culture and a hip joint aspirate. These tests were both positive with Listeria monocytogenes within 24hrs.

Meanwhile, the patient had been started on IV amoxicillin for a presumed community-acquired pneumonia on CXR. The dose of this was increased to 2g 4 hourly once aspirate culture result was known. The patient had stage one of a two-stage revision of the affected hip within 48hrs of admission, 3/5 intra-operative samples were positive for Listeria monocytogenes with the same antibiogram as the initial samples.

5 weeks into treatment the patient has had a good response and is mobile on the temporary spacer in the hip joint.

This case is significant in isolation for the proven Listeria prosthetic joint infection which is rare, having significantly fewer than 100 cases in the published literature.

Also significant is the lack of clarity of where the patient contracted the infection- the patient's occupation as a farmer gives them exposure to multiple potential sources of listeria particularly their close contact with pregnant ruminant animals.

There seem to be no cases in the literature of a confluence of risk occupation, chronic corticosteroids and advancing age; certainly there is a known subtype of non-invasive cutaneous listeriosis in veterinary and farm workers but all other literature doesn't seem to deal with this unique patient group.

In summary, Listeria monocytogenes is a rare but important cause of prosthetic joint infection and should be considered in older or immunosuppressed patients with PJI, particularly farm workers.

Daptomycin Induced Eosinophilic Pneumonitis: Clinical Features, Diagnostic Challenges and Outcomes from a UK Cohort

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Background: Daptomycin is widely used for serious gram-positive infections but may rarely cause eosinophilic pneumonitis (EP). The BNF lists “respiratory disorders” as a side effect of unknown frequency, whilst the MHRA in 2011 reported a rate <1/10,000. No national guidance exists, and various diagnostic criteria have been proposed. We reviewed local experience of EP at Cambridge University Hospitals (CUH), focusing on patient characteristics, presentation, management, and outcomes.

Methods: Adult patients (≥18 years) receiving ≥1 day of daptomycin at CUH between January 2021 and December 2024 were included. For each daptomycin course, various data were collected as part of a wider audit. EP cases were then identified from patient notes where the infection team had documented a diagnosis. Patient record review recorded demographics, duration, dose, symptoms, lab results (CK, peripheral eosinophils, BAL), imaging, corticosteroid use, hospital and ICU admission, and mortality. Associations between demographics, dosing, and EP were explored using descriptive statistics and t-tests.

Results: Ten patients (1.7% of all courses) developed EP. Median age was 72 years and 50% were male. Median dose was 9.3 mg/kg, with symptom onset at a median of 31 days (range 11-70). Dyspnoea occurred in eight patients, hypoxaemia in three, and fever in one. Peripheral eosinophilia was present at onset in five, with two more developing it within two weeks. Imaging supported EP in 90% of cases. BAL was performed in four, all showing elevated eosinophils although none >25%. All patients discontinued daptomycin and five received corticosteroids. Five required hospital admission; 1 patient required ICU and subsequently died due to EP. Concordance with published criteria varied: 10% met Phillip’s criteria whereas 70% were definite by Lyon algorithm. For courses ≥21 days, only older age was significantly associated with EP; other factors (dose, duration, weight, sex) were not. No clear comorbidity risk factors were identified.

Conclusions: EP occurred in 1.7% of daptomycin courses, typically after 4 weeks at 8–10 mg/kg dose, with older age a significant risk factor. Clinical features ranged from full recovery to death. We recommend active monitoring for respiratory symptoms during prolonged therapy, particularly in older patients. The variable performance of the diagnostic criteria highlights the need for standardised guidance.

Learning objectives:
· Recognise the clinical presentation and timing of daptomycin induced eosinophilic pneumonitis.
· Identify risk factors and key features to detect EP early in high-risk patients.
· Understand the variability in diagnostic criteria and the opportunity for standardising diagnosis and management.

Assessment of Echocardiography Practices and Endocarditis Risk Stratification in Staphylococcus aureus Bacteraemia at Barts Health NHS Trust

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Introduction
Infective endocarditis (IE) is a serious complication of Staphylococcus aureus bacteraemia (SAB), occurring in an estimated 10–20% of cases. Current UK guidance (British Society for Antimicrobial Chemotherapy and Scottish Antimicrobial Prescribing Group) recommends transthoracic echocardiography (TTE) for all patients with SAB, placing substantial demand on inpatient echocardiography services. Clinical risk stratification tools such as the VIRSTA and POSITIVE scores may enable more targeted investigation by identifying patients at low risk of IE. We evaluated local echocardiography practice in SAB and retrospectively assessed the diagnostic performance of these scores in our cohort.

Methods
We conducted a retrospective observational study of adults admitted with SAB to Barts Health NHS Trust over a 3-month period (January–March 2025). Data collected included demographics, clinical risk factors for IE, microbiological features, echocardiography timing and findings, and clinical outcomes. VIRSTA (high risk ≥3 points) and POSITIVE (≥4 points) scores were calculated retrospectively. Diagnostic performance was assessed using sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV), with 95% Wilson confidence intervals (CIs).

Results
66 patients were included; 11 (16.7%) had confirmed IE. Median age was 62 years; no MRSA bacteraemia was identified. 38% of infections were community-acquired. Clearance blood cultures within 72 hours were obtained in 43 patients (65%).

TTE was performed in 62 patients (93.9%), with a median time of 3 days from first positive blood culture. Eight patients (12.1%) underwent transoesophageal echocardiography (TOE). Three IE cases were diagnosed on TTE and four on subsequent TOE following non-diagnostic TTE. Four additional patients were treated for IE based on specialist clinical assessment despite non-diagnostic imaging.

The VIRSTA score (≥3) demonstrated sensitivity 1.00 (95% CI 0.74–1.00), specificity 0.35 (0.23–0.48), NPV 1.00 (0.83–1.00) and PPV 0.23 (0.14–0.37). The POSITIVE score (≥4) demonstrated sensitivity 0.82 (0.52–0.95), specificity 0.53 (0.40–0.65), NPV 0.94 (0.79–0.98) and PPV 0.26 (0.14–0.42).

Conclusions
Both VIRSTA and POSITIVE demonstrated excellent negative predictive value in this SAB cohort, supporting their potential role as rule-out tools to reduce unnecessary TTE, particularly given reported TTE sensitivity for IE in SAB as low as 23%. The high sensitivity of VIRSTA supports investigation with TTE ± TOE in patients scoring ≥3; however, reliance on timely repeat blood cultures may reduce score accuracy in routine practice, given suboptimal clearance culture rates. The POSITIVE score showed greater specificity but lower sensitivity.

Risk-stratified echocardiography pathways may optimise use of limited echocardiography resources while maintaining timely diagnosis of IE in high-risk patients.

Real-world clinical experience with rezafungin: a case series from a UK tertiary care Centre

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Introduction:
Echinocandins, including rezafungin, are the recommended first-line treatment for invasive candidiasis. What makes rezafungin unique is its prolonged half-life, enabling once-weekly administration on outpatient basis. Published clinical experience, however, remains limited. Following its addition to the formulary at UHSussex, we describe our experience of rezafungin use over a 6-month period from August 2025. UHSussex covers a geographically wide area with higher prevalence of socially vulnerable patients than the national average, necessitating flexible treatment strategy.

Methods:
We present a retrospective case series of adult patients receiving rezafungin at a tertiary infectious diseases centre. Rezafungin use required approval of an infection specialist, and was considered when azoles were inappropriate, daily echinocandins were logistically challenging, and administration on outpatient basis was feasible. A single dose of rezafungin was considered equivalent to a 7-day course of a conventional echinocandin.

Results / Summary of Cases:
Patient A was initially admitted with Campylobacter colitis and developed candidemia due to Candida glabrata. Imaging demonstrated multiple hepatic lesions, leading to diagnostic uncertainty between new metastatic disease and fungal infection. After a lead-in period of daily echinocandins, the patient was discharged home on rezafungin, with follow-up imaging showing complete resolution after 6 weeks, confirming the hepatic lesions to be fungal-related.
Patient B was admitted for treatment of neurosyphilis and then developed Candida glabrata candidemia during a prolonged inpatient stay complicated by persistent fever, difficult intravenous access, and line misuse associated with intravenous drug use. Initial treatment with anidulafungin was limited by these factors, and rezafungin enabled once-weekly dosing and improved treatment delivery.
Patient C had a right prosthetic hip infection, with intraoperative tissue sample obtained from first-stage revision surgery yielding Candida parapsilosis alongside bacterial pathogens. The patient required prolonged antifungal therapy, but fluconazole was discontinued due to a drug-related rash and eosinophilia. Rezafungin was initiated as an alternative, enabling once-weekly outpatient administration.

Discussion and Conclusion:
Rezafungin use allowed early patient discharge, supported community treatment of vulnerable patients, and provided a feasible alternative when azoles were unsuitable. For the three patients, rezafungin use also resulted in net cost savings of over £46,632 and 224 bed-days.
We have so far noted positive patient outcomes, with no adverse drug reactions, relapses, or mortality. The cases reflect the experience at UHSussex with its peculiar patient characteristics, but our findings suggest its once-weekly schedule may improve access especially for PWID and individuals experiencing homelessness who do not qualify for standard OPAT services.

To Determine the Risk of Cosmetic Procedures Leading to Non-Tuberculous Mycobacteria (NTM) Infections: A Systematic Review

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Introduction: reports of cosmetic procedures leading to nontuberculous mycobacteria (NTM) infection are increasing. There is increased demand for cosmetic procedures due to social pressure. The increased incidence of medical tourism – patients travelling to have cosmetic procedures due to accessibility or financial burden, lack of regulation and environmental conditions increase the risk of NTM infection.

Aim: conduct a systematic review to determine the risk of cosmetic procedures leading to NTM infection, investigating factors such as demography, type of procedure, clinical presentation and incubation period, type of NTM, medical and surgical management, and outcome.

Methods: the study uses the Preferred Reporting Items for Systematic Reviews (PRISMA) checklist. Patients that underwent cosmetic procedures with a diagnosis of NTM or those that met the case criteria were included. 295 studies were identified in the initial databases search (Medline, Embase, Scopus), and 83 remaining after screening for qualitative synthesis.

Results: there were 458 patients in the final analysis from 47 case reports vs 36 case series. The number of patients per study ranges from 1 patient for case reports and 2-49 patients for case series. The number of studies in the literature increases with time. The highest number of studies are in the US, China and Dominican Republic. High risk procedures are cosmetic injections, mammoplasty, liposuction and abdominoplasty. M.
abscessus, M. chelonae and M. fortuitum were the main types of NTM. 96.4% of studies report patients receiving antibiotics and 56.6% for surgical intervention. There were 3 deaths, 2 from NTM infection.

Conclusion: There is a relationship between cosmetic procedures leading to NTM infection and certain countries, patients, procedures and types of NTM. Future research and regulation are important to monitor cases, outbreaks, high risk countries, patients and procedures, for early recognition and treatment and to inform guidelines.

A dose-response network meta-analysis of chlorhexidine and povidone-iodine skin antiseptics for the prevention of infection in clean surgery

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Background: Infection is the most common and costly complication of surgery. Chlorehexidine (CHX) in alcohol is the most effective topical skin antiseptic for reducing the risk of surgical site infection (SSI). However, the most safe and effective concentration of CHX in alcohol has never been compared head-to-head and remains a topic of debate. The recent ability to model the dose-response effect of antiseptics in the framework of network meta-analysis (NMA) represents the rationale for this study.

Methods: We searched for studies comparing the effect of different topical antiseptic preparations of CHX and povidone-iodine (PVI) on the dichotomous outcome of SSI following clean surgery. We excluded studies concerning indwelling vascular catheters, arterial or venous puncture for blood sampling, SSI-prevention bundles, combination/multiple antiseptics and case reports. A Bayesian network meta-analysis was performed to estimate the relative efficacy of different doses (concentrations) of antiseptics in both aqueous and alcoholic form.

Results: We included 32 studies comparing different formulations of CHX and PVI in 20541 individuals and 737 surgical site infections. 19 randomised studies formed the network. At the median baseline SSI risk (3.2%), the posterior median odds ratio (95% credible interval) for developing SSI was 2.32 (0.05, 4.78) for 0.5% vs 2.5% CHX in alcohol, and 3.22 (1.54, 5.1) for 10% vs 0.7% PVI in alcohol.

Conclusion: SSI risk is related to the concentration of topical antiseptic used for skin preparation in clean surgery. The direction and magnitude of this relationship appears dependent upon both the antiseptic agent and solvent. Future research should directly compare different doses of CHX in alcohol for SSI prevention, in particular exploring doses at higher concentrations than 2.0%.

Orthopaedic culture results inform peri-operative prophylaxis and local antibiotic use in bone and joint infections at James Cook University Hospital

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Introduction

Fracture-Related Infections (FRIs) and Prosthetic-Joint Infections (PJIs) cause high rates of morbidity and mortality. Management typically involves surgical intervention and a combination of local and intravenous antibiotic therapies. A joint aspiration may be performed peri-operatively to help inform post-operative antibiotic selection. Emerging evidence suggests local antibiotic therapy may remove the need for prolonged systemic therapy when prosthetic material is removed or exchanged. This study aimed to assess our current local and systemic antimicrobial guidelines against culture results, and assess the utility of aspiration prior to definitive surgery.

Methods

Eligible patients were identified from the National Joint Registry and our trust orthopaedic infection database. Demographic and clinical data were gathered retrospectively. Culture results were analysed to determine concordance between samples, and resistance patterns compared to trust guideline recommended antibiotic regimens.

Results

174 patients were identified, 143 with PJIs (83 Knee-PJIs, 60 hip-PJIs), and 31 with FRIs. A majority of infections had positive culture results (88% of PJIs and 97% of FRIs), with polymicrobial growth common (43% of PJIs and 76% of FRIs). Staphylococcus aureus and coagulase-negative Staphylococci were the most frequently cultured organisms in all groups. Gram negative bacteria were also isolated in a significant number of patients (29% of PJIs and 48% of FRIs).

There were significant rates of resistance to our current standard perioperative antibiotic regimen (Ceftriaxone and Teicoplanin). 33% of FRIs and 17% of PJIs isolated resistant organisms, mainly Gram-negative bacteria resistant to Ceftriaxone. Conversely, resistance to standard local antibiotics (Vancomycin and Gentamicin) was uncommon (2% of PJIs and 13% of FRIs).

In PJIs, there was poor concordance between pre-operative aspiration and subsequent surgical cultures (46% for knee PJIs and 57% for hip PJIs). Most commonly, surgical cultures were more likely to detect polymicrobial growth. Importantly, infection with organisms resistant to standard peri-operative antimicrobial prophylaxis was not detected on aspiration cultures in 9% of patients suffering PJIs.

Conclusion

This study has informed a change in our trust guidelines due to the detection of significant rates of antimicrobial resistance to our standard peri-operative antibiotic regimen in patients with PJIs and FRIs. Resistance to our usual local antibiotic combination of Vancomycin and Teicoplanin was less common, a reassuring finding as we move away from routinely using prolonged systemic antimicrobial treatment. Additionally, culture of pre-operative joint aspiration samples appears to have limited utility in informing subsequent anti-microbial choices.

Treatment Acceptance Among Patients with Latent Tuberculosis: A Retrospective Observational Study

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Background:
A quarter of the global population is estimated to be infected with Mycobacterium tuberculosis. In England, tuberculosis (TB) prevalence increased by 13.6% in 2024. Latent TB (LTBI) is defined as immune stimulation by M. tuberculosis, without evidence of active disease. Without treatment, 5-10% of those with LTBI will develop active TB within their lifetime. Efforts to reduce rates of TB require the identification and treatment of those with LTBI, prior to reactivation. NICE guidance recommends TB risk assessment for all new NHS employees. At Cambridge University Hospitals (CUH), healthcare workers are screened with an Interferon gamma release assay (IGRA). Those testing positive are referred to a TB clinic and, if diagnosed with LTBI, are offered eradication therapy.

Objectives:
To describe the demographic characteristics of those offered LTBI eradication therapy and to explore associations between demographic characteristics and treatment acceptance.

Methods:
Data were extracted from the records of all patients referred to the CUH TB service in 2024. Key demographic data collected included age, gender and profession. Patients offered LTBI eradication therapy were identified, and the demographics of this group were summarised. We then conducted a retrospective analysis to characterise associations of age, gender and profession with acceptance of eradication therapy. Associations were explored using univariable logistic regression models, with results presented as odds ratios (ORs) and predicted probabilities with 95% confidence intervals. Analyses were exploratory due to sample size limitations.

Results:
206 patients were offered LTBI eradication therapy; 131/206 (64%) accepted and 75/206 (36%) declined. Mean age was 36.3 years; 114/206 were female (55.3%). The most common professions were healthcare support workers (n=59, 28.6%), nurses (n=42, 20.4%) and doctors (n=30, 14.6%). Increasing age was associated with lower odds of treatment acceptance (OR per year increase = 0.98), although this was not statistically significant (p=0.22). There was no evidence of association between gender and treatment acceptance (OR=1.04, p=0.89). Treatment acceptance appeared to vary across professions, although estimates for smaller subgroups were imprecise.

Conclusions:
Age and gender were not strongly associated with LTBI treatment uptake. Apparent differences in uptake across professions should be interpreted cautiously given small subgroup sizes. Larger studies are required to more robustly characterise associations between demographic factors and uptake of LTBI eradication therapy. We hope to conduct future analyses incorporating additional cohorts, allowing us to identify groups less likely to accept LTBI treatment and target interventions to increase uptake.

Aciclovir toxicity in a patient with HSV-1 encephalitis: why BMI matters

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Background

Intravenous aciclovir is first-line therapy for herpes simplex virus (HSV) encephalitis but can cause dose-related nephrotoxicity and neurotoxicity. In people with obesity, dosing by total body weight may lead to supratherapeutic exposure. We report a case of aciclovir toxicity in a patient with obesity treated for HSV-1 encephalitis.

Case presentation

A woman in her seventies (weight 90 kg, BMI 35 kg/m²) presented with headache, fever, acute confusion, slurred speech, tonic–clonic seizures and left-sided weakness. Initial CT head was normal. Lumbar puncture showed lymphocytic pleocytosis (296 cells/µL), elevated protein (0.96 g/L) and CSF glucose 3.4 mmol/L. HSV-1 was detected on CSF (BioFire Film Array). She was commenced on intravenous ceftriaxone, amoxicillin and aciclovir 10 mg/kg three times daily, prescribed as 900 mg TDS based on total body weight.

After 6 days, she developed stage 3 acute kidney injury. Given BMI >30 kg/m², trust guidance recommends dosing IV aciclovir using adjusted body weight (67 kg), corresponding to 670 mg TDS. It became clear that the patient had been overdosed, and nephrotoxicity secondary to aciclovir was suspected; aciclovir was changed to intravenous foscarnet. She then deteriorated neurologically (GCS 7/15) with ongoing seizures. Repeat CT brain demonstrated a lobulated mass-like right frontal lesion with mild midline shift, raising concern for cerebral abscess. She required ICU admission for intubation and ventilation and subsequently renal replacement therapy. MRI brain confirmed temporal lobe encephalitis with marked cerebral oedema and mass effect.

Therapeutic drug monitoring supported toxicity with random aciclovir level of 3.4 mg/L and elevated 9-carboxymethoxymethylguanine (CMMG), a toxic metabolite of aciclovir, at 5.2 mg/L (pre-dose target <2.6 mg/L). Seizures were felt to be multifactorial (encephalitis, cerebral oedema and possible aciclovir-related neurotoxicity). Repeat lumbar puncture on day 14 of antiviral therapy demonstrated clearance of HSV-1 DNA from CSF and foscarnet was discontinued.

Outcome

The patient was discharged after 4 months of hospital stay. The patient's prolonged hospital stay was primarily attributable to ventilator associated pneumonia, which contributed to a prolonged ICU course and delayed tracheostomy wean. Renal function recovered to baseline before discharge.

Conclusion:

-Aciclovir can precipitate in renal tubules causing obstructive crystal nephropathy and AKI.

-In people with obesity, dosing by total body weight risks supratherapeutic exposure and toxicity (AKI and neurotoxicity/seizures).

-Use ideal or adjusted body weight for IV aciclovir when BMI >30 kg/m² and ensure adequate hydration and monitor renal function closely.

-Consider aciclovir level and CMMG when toxicity is suspected.

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Evaluation of the real world data for incidence and risk factors of acute kidney injury in patients treated with flucloxacillin for Methicillin susceptible Staphylococcus aureus bacteraemia : A Retrospective Cohort Study

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Background: Flucloxacillin remains fist-line therapy for methicillin-susceptible Staphylococcus aureus (MSSA) bacteraemia; however, concerns persist regarding potential renal toxicity, including acute kidney injury (AKI). Recent unpublished findings from the Staphylococcus aureus Network Adaptive Platform (SNAP) trial suggest lower AKI rates with cefazolin compared to flucloxacillin, highlighting the need to further evaluate the renal safety profile of standard-of-care therapy.

Aim: To determine the incidence and determinants of renal complications in adults treated with intravenous flucloxacillin for MSSA bacteraemia.

Objectives:

1. To determine the incidence of acute kidney injury and other renal complications during flucloxacillin therapy.
2. To characterize the timing, and severity of renal dysfunction.
3. To identify patient-, disease-, and treatment-related risk factors associated with renal complications, including flucloxacillin dose, duration, and concurrent nephrotoxic medications.

Methods: We conducted a retrospective cohort study at a UK tertiary healthcare centre, including adult patients (≥18 years) with microbiologically confirmed MSSA bacteraemia treated with intravenous flucloxacillin between April 2024 and March 2025. Acute kidney injury was defined according to Kidney Disease: Improving Global Outcomes (KDIGO) serum creatinine criteria. Demographic, clinical, and treatment-related variables—including dosing, duration, and concomitant nephrotoxic medications—were analysed.

Results: Of 121 patients screened, 54 met inclusion criteria. Two patients (3.7%) developed AKI during therapy. In one case, AKI was associated with norovirus-related volume depletion and resolved with fluid resuscitation. In the second case, AKI coincided with initiation of gentamicin for endocarditis management. Flucloxacillin was continued in both cases, and no AKI events were directly attributable to flucloxacillin monotherapy. No patients required renal replacement therapy. The overall 90 days mortality for patients with MSSA bacteraemia was 24.8%.

Conclusion: In this cohort, flucloxacillin was not associated with intrinsic renal toxicity. The observed incidence of AKI was low and attributable to alternative clinical factors. These findings support the renal safety of flucloxacillin in MSSA bacteraemia; however, larger multicentre studies are warranted to confirm these results and inform antimicrobial stewardship strategies.

The smiling assassin: a striking case of ‘fish’ tank granuloma

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A 72-year -old lady presented in the winter with a 3 week history of an ascending nodular lymphangitis after a superficial skin injury to the dorsum of her right hand 7 weeks prior. Despite three courses of empirical antibiotics – including: doxycycline, clarithromycin and amoxicillin, plus topical fucidin cream, her symptoms progressed. The skin nodules were painless, non-pruritic and not erythematous, but were violaceous and exudative of yellow pus. She was systemically well and reported no fevers, rigors, night sweats or weight loss.

Her past medical history included: hypertension, gout, type 2 diabetes (on oral treatment only), asthma, hay fever, osteoarthritis and bilateral knee replacements. She had no history of malignancy or immunosuppression. She had no changes to her regular medications. She had no significant travel history. She had two French bulldogs and an outdoor pond with koi karp. However, she denied any water contact and claimed to always use long gloves in the garden when tending to the fish in the summer months. She denied any outdoor injuries and was not a gardener.

Her bloods were unremarkable, including normal inflammatory markers. Treatment was suspended until return of a skin biopsy which showed: necrotising granulomatous inflammation, in keeping with mycobacterial infection, including fish tank granuloma, although only a single acid-fast bacillus was identified.

On further clarification of the history, the patient recalled grabbing her friends axolotl with her bare hand out of a fish tank prior to the onset of the lesions, just before this she had got her hand stuck in a door and had a small wound on the dorsum of her hand which was the likely entry point for the bacteria. She is currently being treated with a prolonged course of clarithromycin and ethambutol.

Learning points:

- Axolotls are amphibians that originate from Mexico, where they reside in high altitude freshwater lakes.
- They are an increasingly common pet in the UK, housed in aquariums at an optimum temperature of 16-18 degrees.
- There are no previous published case reports of cutaneous mycobacterium secondary to water exposure from aquariums housing axolotls.

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Intracranial toxoplasmosis and lymphomatoid granulomatosis disease in an immunosuppressed patient

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Background
Toxoplasma gondii is a parasite which, in infected immunosuppressed individuals, often presents with central nervous system disease, either through acute infection, or reactivation of latent infection. Lymphomatoid granulomatosis (LYG) is a rare lymphoproliferative disorder driven by Epstein-Barr virus (EBV) in those with immune dysfunction.

Case description
A 62 year old woman with systemic lupus erythematosus (SLE), membranous glomerulonephritis, and Sjogren's disease was admitted to hospital with 2 weeks of expressive dysphasia, and 2 months of poor balance. Regular medications included mycophenolate mofetil, hydroxychloroquine and prednisolone. Clinical examination was notable for fever and ataxia. Immunosuppression was held pending further investigations.

MRI imaging demonstrated multiple ring-enhancing intracerebral lesions. A lumbar puncture was performed, CSF: EBV detected by PCR (of note blood EBV:161copies/mL). An urgent cerebellar lesion biopsy was performed. Histology demonstrated severe granulomatous inflammation with bradyzoites – the cystic dormant stage of T. gondii. No tachyzoites, the rapidly multiplying stage, which would have indicated reactivation of latent infection, were seen. Toxoplasma serology however, was more suggestive of acute infection – IgM strongly positive, raised dye test, IgG positive. CSF and EDTA blood were toxoplasma PCR negative. HIV negative. Patient owned a cat, with a cat bite in the weeks prior to presentation.

Toxoplasma treatment (second line) was started – calcium folinate, clindamycin and pyrimethamine - due to concerns for sulpha-drugs exacerbating lupus. Rash due to clindamycin necessitated switching to third line therapy with atovaquone replacing clindamycin. Case discussed with Toxoplasma Reference Unit.

Subsequent examination of the same biopsy was reported as consistent with LYG. Word-finding difficulties two weeks into toxoplasmosis treatment triggered repeat imaging showing worsening appearances. Decision was made for urgent treatment of LYG with rituximab and methotrexate. She received a planned 6 weeks of toxoplasmosis treatment phase, before switching to atovaquone and pyrimethamine as suppressive therapy, likely lifelong.

Discussion
1. Diagnostic uncertainty for the aetiology of presentation – was it all LYG, prompting the biopsy, incidentally with latent toxoplasmosis? However, toxoplasma serology favoured acute infection, but could cross-reactivity have occurred?

2. Did immunosuppression lead to the EBV-driven LYG, in turn reactivating latent toxoplasmosis?

3. There are challenges in treatment of patients with SLE due to the need to avoid sulpha-based regimens. Efficacy data is lacking for the regimens that needed to be used.

Learning Objectives:
1. Toxoplasmosis diagnosis: acute versus latent disease.

2. Differential diagnoses of intra-cerebral lesions in immunosuppressed patients.
3. Toxoplasmosis management including 2nd/3rd line options.

Much Ado About Dosing: Improving IV Aciclovir Prescribing Accuracy in Encephalitis Through Educational Interventions: A Quality Improvement Project

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Introduction:

Intravenous Aciclovir is the recommended treatment for encephalitis but carries significant risks of nephrotoxicity and neurotoxicity. Previous trust wide audit identified inaccuracies in intravenous aciclovir prescribing in encephalitis, with only 42% of prescriptions correct between April-September 2025. Ensuring accurate dosing of aciclovir is essential for patient safety and a core component of antimicrobial stewardship.

Aim:

Improve healthcare staff understanding of correct intravenous aciclovir dosing and confidence in prescribing by 50% by February 2026 through targeted educational interventions at Royal Preston Hospital (RPH).

Learning Objectives:

To improve:
Understanding of local prescribing guidelines.
Knowledge of adjusting dose frequency for renal impairment.
Knowledge of dose adjustment using ideal body weight for BMI>30.

Methods:

A staff education programme was delivered to 31 participants at RPH in January and February 2026. Participants were invited to fill in a pre-session questionnaire, to establish baseline knowledge of aciclovir prescribing practice, using multiple choice questions (MCQs), alongside self-reported confidence measured on a Likert scale. A 30 minute teaching session was then delivered, comprising of case-based discussions, and a review of local aciclovir prescribing guideline for encephalitis. This was followed by a post-session questionnaire, comprised of the same MCQs and Likert scale.

Results:

Baseline knowledge of aciclovir prescribing was limited; 61% of participants correctly adjusted doses for BMI>30, 35% for renal function, and only 35% recognised that oral aciclovir is not recommended in the treatment of encephalitis. Post-session, correct responses improved to 90%, 63%, and 73%, respectively.

Confidence in prescribing with adjustments for BMI and renal function also increased, with 53% rating themselves as ‘very confident’ and 40% as ‘confident’ post-session, compared to 6.5% and 9.7% pre-session.

Notably, 82% of participants had not previously read aciclovir prescribing guidelines. Participants also recommended that easier access to prescribing guidelines may improve accuracy, identifying our next steps for a second PDSA cycle.

Discussion:

This study forms the first PDSA cycle of our quality improvement project designed to improve dosing accuracy. The educational sessions highlighted the need for more systemic interventions, such as embedding guidelines into prescribing software. This would further increase compliance, and ensure a trust wide approach to prescribing. Hence, a second PDSA cycle integrating guidelines into the electronic prescribing system is currently underway, with re-audit planned.

Conclusion:

Educational interventions significantly improved knowledge and confidence in intravenous Aciclovir prescribing in encephalitis, forming a strong foundation for further system level improvements to enhance patient safety and antimicrobial stewardship.

Improving the management of patients with pyelonephritis in the Sheffield Infectious Diseases department: A quality improvement project

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Background: Pyelonephritis is a common cause for hospital admission in the UK, yet there are no national guidelines for diagnosis and management.

Despite European and American guidelines (EAU guidelines, 2025; ACR Appropriateness Criteria, 2022) recommending imaging only in specific cases (such suspected urolithiasis), our clinical experience suggested patients with pyelonephritis routinely undergo renal imaging, potentially contributing to longer admissions. Recent studies have demonstrated utility of simple prediction rules to identify patients who require imaging, based on eGFR, urine pH and history of urolithiasis (Nieuwkoop et al. 2020).

Another potential contributor to prolonged admissions may be extended duration of IV treatment, but there is increasing evidence that shorter antibiotic courses with earlier IV to oral switch are as effective as longer courses (Eliakim-Raz et al. 2013).

Aims: We undertook a quality improvement project aiming to improve management of pyelonephritis cases managed by the Infectious Diseases department in Sheffield Teaching Hospitals NHS Foundations Trust. We specifically aimed to optimise patient experience by reducing the burden of unnecessary imaging and reducing antibiotic course duration in line with existing evidence.

Methods: We reviewed clinical records of all inpatients managed by the infectious diseases team in Sheffield with a coded diagnosis of pyelonephritis without features defining complicated pyelonephritis, over two time periods. Baseline data collection (Cycle 1) included patients admitted from September – December 2024, while subsequent data collection (Cycle 2) included patients admitted from April – July 2025. Following baseline data collection, we delivered an educational session within our department and developed posters promoting use of decision rules for imaging choice and including guidance on appropriate antibiotic prescription.

Results: Cycle 1 included 21 patients (median age 36 years, 90.5% female) while cycle 2 included 30 patients (median age 30.5 years, 100% female).

Baseline data collection indicated that almost all patient admitted with pyelonephritis underwent either ultrasound or CT imaging (90.5%, 19/21), but in almost all cases the results did not alter patient management (94.7%, 18/19). Following intervention, the proportion of patients undergoing imaging decreased to 66.7% (20/30).

The median length of antibiotic treatment decreased from 10 to 8.5 days between cycles, consistent with our poster recommendation for 7-10 days total treatment.

Conclusion: Use of educational posters to encourage evidence-based antibiotic prescribing and use of a decision rule to guide imaging requests is a simple intervention which may improve care for patients with pyelonephritis, with associated gains in terms of healthcare cost and sustainability.

How is syphilis serology being used in the acute geriatrics cohort in a district general hospital in London?

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Background
Acute confusion is a common problem that affects elderly patients. Neurosyphilis, caused by advanced infection with Treponema pallidum sp pallidum, can cause acute confusion. In England, syphilis diagnoses have risen, including in older patients. Our centre is in a borough with higher-than-average rates of syphilis.

Aim
To describe the volume and yield of syphilis serology in acutely confused patients aged ≥ 75.
To describe the clinical outcomes for patients with positive treponemal antibodies.

Methods
We retrieved admission data for all geriatric (aged ≥ 75) patients who were admitted to our centre 2020-2025 and received both a biochemical confusion screen (bone profile, thyroid function test, B12 and folate levels, vitamin D levels) and CT Head <48 hours of admission. Data requested included demographic characteristics, bloodborne virus screens, lumbar puncture (LP) results, comorbidities, admission length and inpatient death.

Results
We identified 1906 admissions representing 1774 unique patients: 783/1906 (41%) male and 1123/1906 (59%) female. Median age at admission was 85 years (interquartile range [IQR] 81, 90). 1278/1906 (67%) were White; 30/1906 (2%) were Mixed; 66/1906 (3%) were Asian; 240/1906 (13%) were Black; 10/1906 (0.5%) were Chinese; 70/1906 (4%) any Other ethnic group; and 212/1906 (11%) had unknown or missing ethnicity data. 97/1906 (5%) had a diagnosis of stroke. 534/1906 (28%) had a diagnosis of dementia. 5/1906 (0.3%) had a diagnosis of encephalitis. 1/1906 (0.01%) had a diagnosis of neurosyphilis. 1/1906 (0.01%) was living with HIV. None had Hepatitis B.

16/1906 (1%) admissions featured syphilis serology. 1/16 (6%) treponemal antibody tests was positive. All tests were performed on unique patients. The median time to a treponemal antibody test was 4 days (IQR 0, 22). LP was performed in 2/16 (13%) admissions including in the patient with positive serology. This patient had serum rapid plasma reagin (RPR) detected 1:1. Treponema pallidum particle agglutination assay was positive; no titre was reported. They were HIV-negative. Cerebrospinal fluid (CSF) syphilis serology was not performed. They survived admission and were discharged after 49 days. They were treated with ceftriaxone and amoxicillin. Repeat RPR was not available.

Conclusion
Syphilis serology was seldom used to investigate acute confusion. When considered, it was performed early in admission. When used, there was a significant positivity rate. CSF sampling to confirm or exclude suspected neurosyphilis was suboptimal. Guideline-directed antibiotic therapy was not given. Further work should examine whether increasing rates of syphilis serology yields more diagnoses of neurosyphilis.

Thailand to Wearside: A case of severe murine typhus in North East England

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Introduction

Typhus group rickettsioses are endemic to many tropical and subtropical regions and represent an important differential for undifferentiated fever in returning travelers. In the UK, only 70 imported cases were reported between 2015 and 2020, reflecting its rarity in clinical practice. We describe a case of severe murine typhus in a returning traveler presenting with multi-organ dysfunction requiring vasopressor support.

Case

A 72-year-old Caucasian man presented to the emergency department of a district general hospital in the North East of England with an eight-day history of fever that began on the plane home from a one-month visit to family in Thailand. Travel was mainly urban with hotel stays in Bangkok and Chiang Mai, but three days were spent in a wooden cabin in rural Saraburi. It was the dry season, and he did not take malaria prophylaxis but reported insect bites and contact with elephants. He denied other animal contact, freshwater exposure, or unwell contacts. He was functionally independent and took no regular medications. Past medical history included colorectal adenocarcinoma treated with curative laparoscopic left hemicolectomy, CKD stage two, and moderate alcohol intake.

He presented with sepsis and multi-organ dysfunction evidenced by metabolic acidosis, atrial fibrillation, acute kidney injury, liver dysfunction, and thrombocytopenia. He was jaundiced with no eschar. He was admitted to intensive care and received three days of vasopressor support alongside empirical antimicrobials. Blood, urine, and cerebrospinal fluid cultures showed no growth. Leptospira IgM and PCR were negative, and reference laboratory malaria films and PCR were negative after equivocal local films. On day five, serology from the Rare Imported Pathogens Laboratory demonstrated spotted fever group and epidemic typhus IgM/IFA positivity, reported as most likely murine typhus infection. Artesunate and meropenem were discontinued. The patient improved and was discharged on day eleven to complete a two-week course of doxycycline.

Discussion

Rickettsial diseases are an important differential for fever in returning travelers from endemic regions. Murine typhus, caused by the gram-negative bacterium Rickettsia typhi, together with epidemic typhus, comprises the typhus group rickettsioses. Transmission occurs via inoculation of infected flea faeces. It should be considered in patients with a 6–14 day incubation period presenting with fever, headache, deranged liver function, and thrombocytopenia, usually without eschar. Most cases are mild and self-limiting, but severe presentations can occur. This case highlights the importance of early multidisciplinary collaboration, timely tetracycline therapy, organ support, and liaison with specialist diagnostic services to optimise outcomes.

Fusobacterium infiltrating chest wall infection in an Immunocompetent patient

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48 year old male presented with progressive painful left breast swelling for a month. Associated with reduced range of motion of the left arm, reduced appetite, five percent weight loss and some night sweats. Of note he was treated for a viral upper respiratory illness and suspected pericarditis in January 2025. No previous exposure to TB. No history of trauma to the chest. No recent history of travel outside the UK, current smoker 30 pack year history. Works as a chef. He had been to the GP three times and was being managed as pericarditis without improvement and they referred him to the Rapid diagnostic centre. A CT Chest was done on 28/01/2026 which showed concern for an infiltrating malignancy on the left chest wall.

He was then admitted with suspicion of infection when his infection markers came back high. On examination he had an erythematous 20 X 10cm swelling in the left breast tender to palpation. His clinical picture was not consistent with a severe infiltrating infection as shown on CT.

USS guided biopsy was done and empiric treatment with Ceftriaxone was started. He showed improvement and was discharged to OPAT with six weeks of Ceftriaxone whilst waiting for the biopsy results.

Cellular pathology results showed chronic granulomatous inflammatory process with focal suppuration.
Biopsy fluid culture results showed Fusobacterium sp isolated after enrichment. Mycobacteria not seen
Blood cultures negative.
Microbiology advised to add Metronidazole. Unfortunately patient could not tolerate it and it was stopped. He is improving symptomatically and his infection markers have come down. We are planning to repeat CT after treatment completion.
Discussion
This case highlights the invasive potential of Fusobacterium in healthy young adults and the importance of considering anaerobes in deep chest wall collections. Differentials include Staphylococcus aureus, Streptococcus pyogenes, polymicrobial anaerobic infection, and Tuberculosis if there is exposure.

Chest wall infection due to Fusobacterium species is rare, particularly in immunocompetent individuals. May arise via haematogenous spread, contiguous extension from empyema, or occult oropharyngeal infection. Fusobacteria are anaerobic Gram-negative bacilli that colonise the oropharynx and gastrointestinal tract. Fusobacterium necrophorum is best known for causing Lemierre’s syndrome.

Diagnosis requires imaging and prompt drainage with specific anaerobic cultures, as organisms are fastidious and may be missed. Management centres on source control and prolonged antibiotics, typically metronidazole or beta-lactam/beta-lactamase inhibitor therapy. Outcomes are favourable with early recognition, but delayed diagnosis may result in sepsis or metastatic complications.

Speeding up bloodstream infection diagnostics: Optimisation of long-read nanopore whole genome sequencing for rapid identification of pathogens and antimicrobial resistance direct from positive blood cultures

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Bloodstream infections (BSIs) are a major cause of morbidity and mortality within the NHS, with an estimated 200,000 cases of sepsis occurring in the UK each year. Earlier identification of causative organisms and antimicrobial resistance is critical to improving outcomes, yet current diagnostic workflows typically require 24–72 hours to provide a final result after a blood culture flags positive. New approaches to detection and diagnosis are therefore urgently needed.

The learning objectives of this study were to optimise a workflow for the use of long-read nanopore sequencing in BSI diagnostics, ensuring the workflow could provide organism identification and detect antimicrobial resistance markers significantly faster than conventional methods. Finally, the faesibility of implementation into a routine laboratory was assessed.

Samples were selected retrospectively from positive BacT/ALERT® blood cultures which had identification and antimicrobial susceptibility performed using established laboratory methods (VITEK® MS Prime and VITEK® 2). DNA was extracted from positive blood cultures using the QIAamp® BiOstic® Bacteremia DNA kit with an additional preliminary differential centrifugation step to reduce the load of human cells. The extraction stage took approximately 1.5 hours. DNA was quantified on the Qubit® 4 using the Qubit® dsDNA HS assay kit.

DNA libraries were then prepared for sequencing on the Oxford Nanopore Technologies MinION Mk1D using the Rapid Barcoding Kit 24 V14 which took a further 1.5 hours. A minimum of 4 samples were barcoded and multiplexed per sequencing run. DNA libraries were loaded on to a MinION flow cell and sequencing run for a minimum of 24 hours with basecalling enabled. Analysis was performed using the wf-bacterial-genomes workflow on EPI2ME. This workflow included assembly, variant calling and genome annotation, and took approximately 20 minutes per sample.

Initial results were very promising. The wf-bacterial genomes workflow was able to provide an organism identification, MLST sequence type and identify key virulence and antimicrobial resistance genes after just 2 hours of sequencing. In an E. coli specimen the workflow correctly identified resistance genes which matched the antibiogram produced by the VITEK® 2.

This workflow demonstrates the potential to reduce the time taken to identification and antimicrobial resistance detection in BSI diagnostics from several days to approximately 5.5 hours after blood culture positivity. Earlier availability of these results could support improved patient outcomes in sepsis management and strengthen antimicrobial stewardship. Drawbacks of this workflow include the high cost, and labour intensive nature of DNA extraction and library preparation.

A Case of Seoul Hantavirus Encephalitis in a patient with Advanced HIV Disease

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Background:
Encephalitis causes significant morbidity and mortality in immunocompromised patients. There is a wide range of infectious and immune-mediated aetiologies with overlapping clinical syndromes making diagnosis challenging. Hantavirus is an RNA virus primarily acquired through inhalation of aerosolized excreta from infected rodents, with a clinical syndrome that typically manifests as haemorrhagic fever with renal syndrome or hantavirus pulmonary syndrome. Encephalitis is an extremely rare extra-renal manifestation.

Case presentation
A 32-year-old woman of Romanian descent presented with a six-week history of headache, and a one-week history of fever, confusion, and somnolence. There was recent travel to Romania and a five-year history of rat sightings on the patient's property.

The patient's HIV-1 serology was reactive with CD4 count 38cells/mm3 and HIV viral load 512,861copies/mL. Hence, treatment was started for viral encephalitis, bacterial meningoencephalitis, cerebral toxoplasmosis, and tuberculous meningitis. Antiretroviral therapy with tenofovir, emtricitabine and dolutegravir was initiated. CD8 encephalitis, autoimmune encephalitis, and CNS lymphoma were considered and treated with steroids. Despite this, the patient deteriorated, developing global symmetrical weakness and respiratory compromise requiring intubation on intensive care. In the absence of clinical improvement, intravenous immunoglobulin was administered on days 24-28.

Serial magnetic resonance imaging over seven weeks demonstrated progressive, bilateral, symmetrical, non-enhancing T2/FLAIR hyperintensities involving the brainstem and dorsal thalami, later extending into the supratentorial white matter with focal diffusion restriction. Extensive serological and CSF testing, including CSF metagenomic sequencing, failed to identify an infectious cause. Autoimmune investigations were unremarkable.

Given comprehensive negative diagnostics, a brain biopsy was performed. Metagenomic sequencing identified Seoul Hantavirus, and a confirmatory PCR was positive. Histology showed demyelination with relative axonal sparing. As such, a national encephalitis multidisciplinary team guided initiation of combination antiviral therapy with ribavirin, remdesivir, and molnupiravir, based on limited preclinical data and extrapolation from studies involving other RNA viruses.

Conclusion

In the context of profound immunosuppression, atypical viral infections should be considered as possible causes of progressive demyelinating pathology. We identified Seoul Hantavirus as a cause of encephalitis in a woman with HIV, without any other features of classical hantavirus disease. This case highlights the utility of metagenomic sequencing as an unbiased diagnostic tool and the importance of testing brain tissue, even when CSF metagenomic testing is negative. The combination of RNA-dependent RNA polymerase inhibitors such as remdesivir and molnupiravir offers potential new treatments for RNA viral infections, which means that pursuing a potentially treatable diagnosis in these cases is of increasing importance.

Microbiological Spectrum and Antibiotic Resistance Patterns in Ocular Infections: A

Retrospective Review from 2019 to 2024

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Introduction:
Ocular infections can lead to significant morbidity, including irreversible vision loss. Prompt microbiological diagnosis is crucial to guide appropriate therapy. This retrospective analysis aimed to evaluate the frequency, demographic distribution, and antimicrobial susceptibility patterns of positive microbial cultures from various eye specimens over a six-year period (2019–2024).
Methods:
A total of 209 positive eye specimens were analyzed, comprising conjunctival swabs (n=40), corneal scrapings (n=20), and vitreous taps (n=149). Data were stratified by year, gender, age group, and organism type. Antimicrobial susceptibility profiles were evaluated for key isolates using standard disc diffusion methods and Minimum inhibitory concentration MIC.
Results:
The highest number of positive cultures were from vitreous taps (71.3%), followed by conjunctival swabs (19.1%) and corneal scrapings (9.6%). A progressive increase in positivity was noted from 2019 (n=25) to a peak in 2022 (n=45), with a slight decline in 2024 (n=30). Males accounted for 55% (n=115) of positive cases, while females constituted 45% (n=94). The most affected age groups were 51–60 years (33%) and 61–70 years (22%). Organism distribution showed a predominance of Pseudomonas spp. (34%), Coagulase Negative Staphylococcus (15.3%), and Staphylococcus aureus (13.9%).
Antimicrobial Susceptibility: Pseudomonas aeruginosa isolates demonstrated high sensitivity to piperacillin-tazobactam (92%) and imipenem (84%). S. aureus showed excellent susceptibility (100%) to vancomycin and linezolid but low response to fluoroquinolones. Resistance was notable for aminoglycosides and fluoroquinolones across Gram-negative isolates.
Conclusion:
Vitreous tap cultures dominate the microbiological profile of ocular infections, with Pseudomonas and Staphylococcus species being the leading pathogens. Resistance to commonly used antibiotics such as ciprofloxacin and gentamicin is increasing. This highlights the need for ongoing surveillance and rational antimicrobial use to guide empirical therapy for ocular infections.

Antibiotic Susceptibility Trends in Clinical Isolates of Listeria monocytogenes: Implications for Empirical Therapy

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introduction:
listeria monocytogenes is an important pathogen affecting neonates, pregnant women, the elderly and immunocompromised indiviuals. while its generally susceptible to first line antimicrobials, emerging resistance warants periodic survillance
methodology:
A retrospective analysis was conducted on Listeria monocytogenes isolates obtained from clinical specimens at Chughtai Institute of Pathology between January 2021 and June 2025. A total of 95 cases were identified over the 4.5-year period. The study aimed to evaluate the antimicrobial susceptibility patterns, particularly to ampicillin, meropenem and trimethoprim-sulfamethoxazole and assess any emerging resistance trends.
Results:
Of the 95 isolates, the highest number of cases were reported in 2022 (27 cases), followed by 2023 (24), 2024 (20), 2021 (16), and 2025 (8 cases till June).
Antimicrobial susceptibility testing (AST) was performed using the VITEK-2 system. Ampicillin remained largely effective, with 91/95 isolates (95.8%) sensitive and only 4 isolates (4.2%) resistant. Meropenem showed 100% sensitivity in all 95 isolates tested. For SXT (trimethoprim-sulfamethoxazole), 73 isolates (76.8%) were sensitive, while 22 (23.2%) showed resistance.
conclusion
This analysis highlights the continued efficacy of ampicillin and meropenem against Listeria monocytogenes, while a modest resistance to trimethoprim-sulfamethoxazole is emerging. These findings underscore the importance of routine AST surveillance, especially in vulnerable age groups such as neonates and the elderly. Furthermore, the data support the continued use of ampicillin as first-line therapy, but also warrant careful consideration of alternatives in resistant cases.

BCG-osis: A clinical case report of culture-positive mycotic aneurysm, attributed to intra-vesical instillation of BCG in the treatment of bladder cancer

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Intra-vesical bacillus Calmette-Guérin (BCG) immunotherapy (compromising a live attenuated strain of Mycobacterium bovis (M. bovis)) is a mainstay in treatment of non-muscle invasive bladder cancer (NMIBC). An uncommon but serious side effect is BCG infection – termed BCG-osis. Localised infection may present as epididymo-orchitis, prostatitis or cystitis; whilst systemic manifestations include sepsis, miliary pneumonitis, osteomyelitis, or rarely, vascular infection. Positive identification of M. bovis through culture can be challenging. With a low diagnostic yield, making the diagnosis and decision to initiate treatment often clinical. Treatment is with anti-tuberculous drugs.

An 82-year-old male attended for a CT scan to investigate weight loss and fatigue. He had a high-grade NMIBC, diagnosed four years previously, with multiple recurrences, receiving 15 courses of intra-vesical BCG. Of note was a 3-month history of scrotal pain, intermittent back pain, and longstanding urinary frequency and sensations of incomplete voiding. The CT scan identified a soft tissue mass inseparable, and likely infiltrating, the aortic bifurcation and common iliac arteries (CIA). Two-months later, the complex irregular aneurysm had increased, extending into the right CIA with an associated lobulated fluid/soft tissue density collection. He was afebrile, and without leucoocytosis, and remained so throughout. Blood cultures (including mycobacterial cultures) were negative. PET-CT identified intense fluorodeoxyglucose uptake centred on the aortic bifurcation and right CIA, with associated abnormal soft tissue infiltration. Culture of an USS-guided biopsy sample from the site was positive for M. tuberculosis complex (AAFB smear positive, and real-time polymerase chain reaction positive). He was commenced on rifampicin, isoniazid and ethambutol therapy (9-month duration) as treatment for BCG-osis. He underwent endovascular aortic repair (EVAR) after 1-week of anti-tuberculous therapy due to an increase in aneurysm size and subsequent rupture risk. M. bovis identification was confirmed by culture and whole genome sequencing.

This case was unusual in its lack of clinical and biochemical signs of systemic infection, and serves as a reminder to suspect BCG-osis even in their absence. The culture-positive result on sampling is also a less commonly reported outcome. Obtaining the sample was high-risk due to the site, and interventional radiologist involvement was crucial. It is possible that the scrotal pain may have been epididymo-orchitis secondary to localised BCG infection with subsequent haematogeneous spread. The EVAR was performed earlier into treatment than planned due to clinical need, raising the possibility of the stent having been placed into an infected field. However, repeat imaging and clinical assessment have been reassuring.

Paraneoplastic Clostridium septicum peri-prosthetic knee septic arthritis associated with aggressive caecal malignancy

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Learning Objectives

1. Positive Clostridium septicum cultures should prompt work up for gastrointestinal malignancy even without the presence of localising clinical features.
2. Peri-prosthetic septic arthritis secondary to Clostridium septicum will require protracted antibiotic treatment.
3. Orthopaedic input is crucial for preventing and managing recurrence of Clostridium septicum septic arthritis

Background

In this report, we describe a rare case of Clostridium septicum peri-prosthetic left knee septic arthritis that prompted early investigation and diagnosis of colonic malignancy in a female patient.

Case Presentation

A woman in her late 70s presented with a painful left knee joint without preceding trauma. Her past medical history was unremarkable apart from bilateral knee replacements six years prior. After physical examination and a normal x-ray, she was deemed to have osteoarthritic pain. She was discharged with safety netting but re-presented days later due to progressive worsening of her symptoms.

A new left knee x-ray displayed numerous gaseous inclusions within and above the joint capsule, suggestive of an anaerobic infection. Joint aspiration yielded 60ml of turbid pus. The aspirate alongside tissue samples from a Debridement Antibiotics and Implant Retention (DAIR) procedure were cultured and grew Clostridium septicum, a gram-positive obligate anaerobic species of bacteria. Due to the bacterium's strong association with gastrointestinal (GI) malignancy, this prompted the microbiology team to advise a Computerised Tomography (CT) abdominal scan to search for a malignant GI focus. CT imaging uncovered a caecal mass. Further work up with colonoscopy displayed a large malignant looking mass at the ileocaecal valve infiltrating into the caecum and biopsy identified this as a caecal tubulovillous adenoma. Following this, the patient underwent a right hemi-colectomy and had varying protracted regimens of antibiotics including ertapenem via Outpatient Parenteral Antimicrobial Therapy (OPAT) and doxycycline to treat the peri-prosthetic septic arthritis.

Nearly a year on from the first presentation, the patient had a further episode of left knee peri-prosthetic septic arthritis, resulting in a one-stage knee revision surgery. Both culture of the debridement samples and 16S PCR testing were negative. Her cancer also progressed and she developed ovarian and liver metastases. She has been treated with four different regimens of palliative chemotherapy over the last two years.

Conclusion

This case indicates the requirement for prompt investigation of GI malignancy when Clostridium septicum is isolated from joint fluid samples as well as blood cultures.

Tetanus in a healthy adult

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Introduction

Tetanus is a rare condition in the UK due to the introduction of an effective vaccine. The diagnosis is clinical and early treatment should be initiated based on clinical presentation and a compatible history. We present a case of clinical tetanus in a fully vaccinated healthy man.

Case

A 20-year-old vaccinated male presented to ED with a 24-hour history of muscle spasms affecting his neck and jaw associated with stiffness, locking, pain, drooling and difficulty swallowing. 10 days prior to presentation the patient sustained a puncture injury to the right palm from a rusty nail while working in the garden, the patient cleaned the wound with alcohol wipes but did not seek medical attention. The patient was diagnosed with clinical tetany and referred to infectious diseases for management. He started intravenous metronidazole and high dose benzodiazepines, prior to surgical debridement. Intravenous human immunoglobulin (IVIg) was given along with tetanus vaccination as per UK Health Security Guidance (UKHSA). The patient's symptoms began to improve 24 hours post debridement, being able to eat and drink, with improved jaw movement and decreased frequency of muscle spasms.

The patient continued to improve, and antibiotics were changed from IV to oral and continued for a total of 5 days. Surgical samples were processed rapidly by the local laboratory and additional tissue samples were added to fastidious anaerobic broth prior to transport to UKHSA. The UKHSA team performed sequential PCRs on the submitted tissue samples, these were negative. Extended incubation of local tissue samples and referred samples failed to yield a positive culture result. The patient had a tetanus antitoxin antibody level of 0.17 IU/ml taken prior to IVIG administration. Titres above 0.1 IU/ml are considered to confer immunity however antibody results alone cannot confirm or exclude a clinical diagnosis of tetanus. The patient's antibody titre was measured 48hrs after presentation, it was not clinically protective but may have attenuated the illness. The patient's illness has fully resolved at 1-month follow up.

Conclusion

Tetanus although rare, is a significant illness in need of urgent medical and surgical intervention. UK and international guidance do not align on the correct management including on the use of antitoxin vs IVig. Appropriate history taking and vigilance to unusual presentations is key in the management of such clinical syndromes. Our case was unaware of the risk of tetanus, suggesting that public health information could be targeted at this age range.

Disseminated adenovirus infections in immunocompromised patients: a single-centre experience at Barts Health NHS Trust

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Introduction:
Disseminated adenovirus infection is associated with high mortality rates in immunocompromised hosts and may present with a range of clinical manifestations. European guidelines advise plasma adenovirus quantitation to guide treatment. However, this is not available in all centres, resulting in heterogeneous approaches to diagnosis and management. Furthermore, clinicians may be reluctant to start treatment as cidofovir therapy may be complicated by nephrotoxicity and requires intravenous weekly administration with concomitant hydration and probenecid.

Aims:
We aimed to characterise all cases of disseminated adenovirus infection at Barts Health NHS Trust to review our practice and determine the need for a quantitative assay.

Methods:
All plasma samples that were positive for adenovirus DNA from 2017 to 2025 were identified. Electronic patient records were retrospectively reviewed to determine patient demographics, immunosuppression, clinical presentation, treatment history, nephrotoxicity and outcomes.

Results:
Adenoviraemia was identified in 38 patients. Seven people (one adult and six children) had were not immunocompromise and all survived. Of the remaining 31 immunocompromised individuals (24 adults and seven children), 21 (68%) were male; median age of 49 years (IQR 26 – 61).

Twenty-one (68%) had a haematological disorder, of whom 11 had undergone an allogeneic stem cell transplant. Three people had received a solid organ transplant (one renal, one lung, one liver); three were living with HIV; three were on immunosuppressive therapy for autoimmune conditions; and one had a primary immunodeficiency. Clinical presentations included fever in 24 (77%), respiratory in 17 (55%), gastrointestinal in nine (29%), hepatitis in four (13%) and urinary in three (10%).

Ten people (32%) received cidofovir therapy (eight adults and two children), all of whom survived to 30 days. Three people developed an acute kidney injury during cidofovir therapy but all recovered renal function back to baseline. Eight (26%) of the immunocompromised patients with disseminated adenovirus infection died within 30 days (seven adults and one child), none had received cidofovir however there were often multiple contributing pathologies present. There was no significant difference in mortality at 6 months between the treated and untreated groups (3/10, 30% vs 10/21, 48% P=0.45)

Conclusion:
Our experience is that cidofovir did not cause lasting kidney damage, even in this complex population. Given the 2026 ECIL guidelines that symptomatic patients at risk should be treated with cidofovir if the plasma adenovirus level is >1000 copies/mL, then a quantitative assay would be helpful to guide treatment and may encourage clinicians to treat earlier.

Clinical and laboratory management of Candidaemia at Cambridge University Hospitals: Comparison of local results against the Mycology Reference Laboratory (MRL)

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Background:
Fungaemia is associated with significant morbidity and mortality. Early appropriate management is associated with improved outcomes. We sought to determine the local epidemiology and assess key performance indicators in the management of patients with fungaemia in CUH.

Methods:
All patients with fungaemia in CUH were identified for the period from 1st November 2024 – 30th November 2025 from Epic. Data was entered onto an Excel spreadsheet. Fungaemias were counted as one episode if the same organism was isolated within a one-week period. In house fungal identification was performed using MALDI-ToF and VITEK2 was used for susceptibility testing. These were subsequently confirmed by further identification and susceptibility testing at the MRL.

Results:
We identified 56 specimens from 32 patients over 33 episodes.
In house fungal identification with MALDI-ToF was non-inferior to MRL results with 100% concordance. Antifungal susceptibility testing showed low concordance at 79.3% and was especially unreliable for Nakaseomyces glabratus (formerly Candida glabrata) and Kluyveromyces marxianus (formerly known as Candida kefyr)
In-house turn around time for identification and antifungal susceptibility testing was acceptable (median 3 days) but not clinically useful for MRL tests (median 22 days).
Clinical management overall was good with all patients who were still alive at time of diagnosis (28/33) having repeat blood cultures and all patients receiving IV therapy for at least 14 days or until decision made to withdraw therapy (9 died before day 14 of treatment). Most patients (96.8%) had appropriate empiric and final therapy.
MALDI-TOF was useful in rationalising therapy enabling safe rationalisation to fluconazole for Candia albicans, Candida parapsilosis and Candida tropicalis.

Conclusion and learning points:
Accurate methods of fungal identification and antifungal susceptibility testing are essential for good patient care. Reliance on regional reference laboratories increases turn around times and delays rationalisation of therapy, which increases risk of harm and higher costs.
Empiric rationalisation of antifungal therapy based on species identification is safe for some isolates, namely Candia albicans, Candida parapsilosis and Candida tropicalis.
Our clinical management of patients was good, however access to quicker reliable diagnostics is required to enable appropriate antifungal therapy. This data has been used to build a business case for alternative methods of in house antifungal susceptibility testing.

Which water source for gastrointestinal endoscopy? Results from a UK survey

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Healthcare Infection Society (HIS) guidelines highlight the importance of the final rinse water used in decontamination of endoscopes being free from bacteria. The British Society for Gastroenterology (BSG) guidelines for upper gastrointestinal endoscopy do not provide guidance on water or on decontamination processes. Evidence and guidance to inform decisions about which water is used to flush endoscopes is lacking.

Aim:

To determine current practices in the UK related to endoscopy:
- water source used to flush endoscopes peri-procedure,
- water source for bedside clean of endoscopes
- available reporting mechanisms to identify suspected endoscopy-associated complications.

Methods:

A survey asking individuals to provide information about endoscopy at their Trust was drafted. Selected IPC specialists and endoscopists reviewed the draft; their comments informed survey revisions.

The final survey was agreed by all authors and emailed to the distribution lists of the BSG, HIS, Infection Prevention Society, and Institute of Decontamination Sciences.
The survey was closed after 1 month. Results were analysed descriptively.

Results:

Over 30 Trusts were represented in responses received, these were mapped to geographical and size distribution of all Trusts.

Most Trusts represented use sterile water from one litre bags to flush both the instrument channel and auxillary/manual channel of the endoscope, a significant minority use unfiltered tap water, while a smaller number use filtered tap water.

Most Trusts have a mechanism to report any infections post-procedure, but these mechanisms vary. A small minority of Trusts had investigated suspected endoscopy-related infections post-procedure.

Discussion

This presentation describes data from a scoping survey and explores other data sources that may help to build the evidence base on this topic. There is significant variation in water use for endoscopies. While most Trusts have reporting mechanisms for suspected procedure-related infections, these vary between Trusts and their sensitivity in identifying procedure-related infections is unknown.

Study limitations include potential recall bias, and limited coverage of NHS Trusts such that we cannot infer UK-wide conclusions. It was beyond this study's scope to investigate the quality of reporting mechanisms for post-procedure complications.

The environmental impacts and financial costs of using pre-packed sterile water are high, yet evidence about any infection risk related to water used for flushing during this non-sterile procedure is lacking. Processes must be in place to enable patients, clinicians and anyone noticing potential signs of infection post-endoscopy to report concerns to be investigated appropriately by IPC and endoscopy teams. Guidelines are needed to inform practice.

Severe pneumococcal sepsis with Austrian syndrome complicated by ventriculitis, multiple cerebral infarcts, and mycotic aneurysm

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Background
Disseminated Streptococcus pneumoniae infection, or invasive pneumococcal disease (IPD), is a life-threatening condition characterised by bacterial spread from the nasopharynx to sterile sites, resulting in sepsis. The triad of pneumococcal meningitis, pneumonia, and endocarditis, known as Austrian syndrome (Osler's triad), is rare and associated with high morbidity and mortality despite appropriate antimicrobial therapy. The lungs are considered the usual portal of entry, with haematogenous dissemination to the endocardium and meninges. Recognised risk factors include alcohol excess, male sex, and advanced age. We report an atypical case of Austrian syndrome complicated by ventriculitis, multifocal cerebral infarction, and a suspected mycotic aneurysm.
Clinical Case
A 46-year-old man presented with vomiting, diarrhoea, poor oral intake, fever, rash, dizziness, headache, and sore throat. He described four to five days of inability to tolerate oral intake and a recent cat scratch. His history included anxiety and sciatica; he was a chronic smoker and occasional cannabis user.
On examination, he was tachycardic with rigors, conjunctivitis, peripheral rash and bruising, and mild pharyngeal congestion. He reported transient right arm weakness without objective deficit; reflexes were intact and there were no meningeal signs. Cardiopulmonary examination was unremarkable. Laboratory tests showed hyponatraemia, hypokalaemia, acute kidney injury, thrombocytopenia, hyperbilirubinaemia, transaminitis, and lactate 4 mmol/L. Chest radiography and ECG were normal. Initial differentials included viral gastroenteritis, leptospirosis, and cat scratch-related infection. Empirical ceftriaxone and doxycycline were commenced. Blood cultures grew S. pneumoniae. Despite minimal respiratory findings and subtle CT thorax changes, he developed agitation and confusion. MRI brain demonstrated multiple septic emboli and ventriculitis; repeat imaging showed evolving infarcts with cerebritis and a suspected small mycotic aneurysm of the left anterior cerebral artery (A2). Transthoracic echocardiography suggested possible valvular vegetation. Cerebrospinal fluid revealed mild pleocytosis, and S. pneumoniae was detected on multiplex PCR. A diagnosis of Austrian syndrome with ventriculitis was established.
Outcome
He required intubation for agitation and airway protection and received high-dose intravenous ceftriaxone with adjunctive corticosteroids. After 14 days in critical care, he improved neurologically and systemically, was extubated, and continues to recover.
Conclusion
This case highlights that S. pneumoniae may present with fulminant sepsis and multi-organ dysfunction without classical meningitic or pneumonic features. Early blood cultures, serial neurological assessment, and advanced imaging were critical in diagnosing Austrian syndrome and its intracranial complications. High clinical suspicion and multidisciplinary management are essential to optimise outcomes in this rare but severe manifestation of IPD.

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Better Information, Better Advice: The impact of an Electronic Referral System on the Quality of Microbiology Referrals

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Introduction
Appropriate and effective antimicrobial advice relies on accurate clinical details and communication. Referrals to microbiology often come with varied information, sometimes incorrect, and often missing key parameters. With rising demands on the service, and in line with the NHS long term plan many centres are moving from a traditional phone call referral system to a digital platform. This audit investigated the change in quality of referrals after implementation of a new digital referral system at Croydon University Hospital.

Aims
To evaluate the overall quality of microbiology referrals being received.
To compare the quality of microbiology referrals before and after implementation of a digital referral system.

Methods
A template for data collection was created to assess the quality of each referral. Parameters measured included appropriateness, inclusion of a working diagnosis, blood results, past medical history/comorbidities, antibiotic history, imaging results and whether incorrect information was also given. Referral quality was assessed using a three-point ordinal scale (1 = adequate referral, 2 = borderline quality referral, 3 = inadequate referral). An adequate referral was defined as a referral with >80% of details provided and no incorrect information. A borderline referral provided 60-80% of the information required; inadequate referrals provided 60% or less or included incorrect information. Differences in referral quality between pre- and post-intervention groups were analysed using an independent-samples Mann–Whitney U test. Statistical significance was set at $p < 0.05$.

Results
A total of 84 referrals were analysed (42 pre-intervention and 42 post-intervention). Post intervention, there was a rise in adequate referrals from 11.9% to 40.5%. Inadequate referrals reduced from 57% to 31%. Referral quality differed significantly between the pre- and post-intervention periods (Mann–Whitney U = 570.5, p =0.003).
Total number of phone calls received reduced from an average of 20 per day to 6 per day.

Conclusion
Implementation of an online e-referral service in microbiology follows the national consensus and within our trust, has resulted in improved quality of information received by microbiologists. However, room for improvement still exists. Introduction of further education and an automated auditing process of digital referrals will help to regularly reaudit and attempt to improve referral quality further.

Septic Arthritis on the Acute Take: Does Admitting Specialty Influence Time to Treatment and Outcomes?

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Learning outcomes:
1. Importance of collaboration between medical and surgical specialities for optimal patient management in septic arthritis
2. Importance of early orthopaedic involvement in assessment, diagnostics and management of septic arthritis

Background:
Septic arthritis is a medical emergency associated with significant morbidity and a 90-day mortality of 7.05%. UK joint guidance from the British Society of Rheumatology and partner organisations recommends early referral of patients with an acutely hot, swollen joint to specialists capable of prompt aspiration for diagnostic and therapeutic purposes. Delays in aspiration and definitive management may adversely affect outcomes. This audit evaluated whether the admitting speciality influenced investigation, management, and outcomes in patients with confirmed native joint septic arthritis at Birmingham Heartlands Hospital.

Methods:
A retrospective audit identified cases through positive joint fluid microbiology and discharge coding of “bacterial arthritis” in patients aged >16 years. After exclusions (planned admissions, alternative primary diagnoses, diabetic foot infection, prosthetic joint infection, or pre-treated cases), 38 confirmed cases were analysed. Data collected included demographics, Charlson Comorbidity Index (CCI), time to aspiration, timing of antibiotics, blood cultures, number of imaging modalities, time to surgical intervention, and length of stay. Outcomes were compared between patients initially admitted under general medicine compared to trauma and orthopaedics (T&O).

Results:
Of 38 cases, 23 were admitted under medicine and 15 under T&O. Baseline demographics and comorbidity burden were similar (mean CCI 4.7 vs 3.7). All patients underwent joint aspiration; however, time to aspiration differed markedly (median 26 hours [mean 58, range 3–216] under medicine vs 8 hours [mean 9, range 2–26] under T&O). Aspiration before antibiotic administration occurred in 12/15 of T&O patients compared with 4/23 under medicine. Blood cultures were obtained in 35 out of 38 cases.

Of all cases, 32 required surgical intervention. Mean time for the first procedure was 5.3 days (range 0–19) under general medicine versus 1.1 days (range 0–5) under T&O. Patients admitted under medicine underwent additional imaging ≥2 modalities in 11/23 cases compared to 6/15 under T&O. The mean length of stay was longer under medicine (average 27 vs 17 days).

Conclusions:
Admission under orthopaedics was associated with earlier joint aspiration and, subsequently, more appropriate antibiotic initiation post-aspiration, earlier surgical intervention, reduced additional imaging, and a shorter overall length of stay. These findings support guideline recommendations for early specialist referral and suggest that directing suspected septic arthritis cases to teams with aspiration expertise may improve efficiency and patient outcomes.

Can online infectious diseases teaching drive lasting learning? A qualitative evaluation of a national postgraduate travel medicine course

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Background:
The COVID-19 pandemic alerted Joint Royal Colleges of Physicians Training Board (JRCPTB) and General Medical Council (GMC) to national health risks posed by imported high consequence infectious diseases (HCID). In response, to ensure expert management, JRCPTB and GMC amended postgraduate infectious diseases (ID) curricular, removing the requirement for in-person TM training, enabling online TM education (TME) delivery. Following these curricular changes, the National Travel Health Network and Centre (NaTHNaC), in collaboration with the Hospital for Tropical Diseases (HTD), developed an online TM course, replacing previous face-to-face teaching. This qualitative study analysed the HTD and NaTHNaC TM Course for UK infection trainees.

Objectives:
To analyse the HTD and NaTHNaC TM Course to understand/explore whether curricular reform and resultant online delivery can drive lasting, impactful learning.

Methods:
NaTHNaC/HTD faculty and trainees were recruited using purposive sampling (n=12) from cohorts involved since course inception (September 2021). Trainee focus groups and individual faculty interviews were conducted online using topic guides. Transcripts were thematically analysed in NVivo.

Results:
Participants described how COVID-19 significantly impacted TM services and TME delivery, reflecting particularly following the shift from in-person to online training, resulting in three overarching themes:
1. Pandemic-driven transformation of TM practice and education: COVID-19 accelerated service reconfiguration, resulting in privatisation of service delivery, driving poor quality TME, reinforcing the need for standardised national/international TME. Failure of TM to achieve specialty status emerged as a barrier to unification.

2. Curriculum reform impacted TME delivery: Curricular reforms derived a clear definition of TM, aiding TME course design and delivery, ensuring baseline TM knowledge for all ID trainees. Online delivery improved accessibility, reducing geographical training and service-provision barriers. TM emerged as a career choice.

3. Limitation of online learning and recommended approaches for generating impactful online teaching: Participants reported reduced interaction, limited experiential learning and disengagement associated with passive asynchronous online content. Non-linear, gamified delivery could enhance online engagement; however, hybridised delivery will optimise learning outcomes.

Conclusions:
This TME-based study demonstrated that online delivery enhances accessibility but diminishes learning value. Enhanced engagement may be achieved through non-linear, gamified approaches, which require further qualitative research for validation. To ensure lasting learning hybridised delivery is proposed. Implications of this study are broad-reaching, applicable to all online teaching. Regarding global health security, this study demonstrated that recognising TM as a distinct speciality would promote development and delivery of globalised TM curricula, strengthening cross-healthcare-sector training, potentially reducing the impact of imported HCID.

Impact of Pharmacist's intervention on IVOS

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Introduction:
Intravenous to oral switch (IVOS) remains an important antimicrobial stewardship facet. Despite research-based evidence of benefits, IVOS remains an underutilised tool in clinical practice with potential to offer gains for patients, healthcare staff and THE organisation. Our study targeted six highly bioavailable antibiotics for which oral equivalents are available within the UK.

Methodology:
An IVOS quality improvement project was conducted between August and December 2025 on the AMU of a tertiary care centre. Six antibiotics with high oral bioavailability were included, ciprofloxacin, levofloxacin, clarithromycin, clindamycin, metronidazole, cotrimoxazole.
Following baseline assessment of intravenous use (August 2025), three one-month in duration sequential interventions were implemented; display of posters, dissemination of educational animated video and pharmacist board round attendance (one hour daily from Monday to Friday) between September to November 2025 respectively. December 2025 had no interventions to assess for rebound effect.
Data on intravenous study antibiotic use was accessed digitally retrospectively and analysed at the end of each month.
Primary outcome measures include the following for study antibiotics:
1. Number of intravenous administrations
2. Medicines and ancillary expenditure

Results:
Whilst a small reduction in the use of our six injectable study drugs was observed following the educational interventions (poster and video), face to face presence of a pharmacist at handover demonstrated an 81.5% improvement across all outcome measures. There were only 38 intravenous administrations in November 2025(v/s 203 in August) with reduction in costs (November-£666 v/s August £3673), CO2 emissions (November 254 Kgs v/s 1392 in August)) and nursing time (19 hours in November v/s 60 hours in August).By investing 20 hours per month of pharmacist time (equating to £800 per month), reductions in expenditure of over £2000 per month of our six study drugs was observed. Additionally, the unintended consequence of reduced expenditure of all other intravenous antibiotics by £1000 per month during the period of pharmacist intervention was also observed.
During December the pharmacist intervention was removed, and prescribing rates of injectable antibiotics rose substantially.
The appropriateness of IVOS showed sustained improvement (58% in August November-79%, December 85%) after pharmacist intervention

Conclusion:
Our study concluded the benefit of face-to-face intervention of pharmacist in IVOS. Hence, we should further empower our pharmacists and utilise their expertise in AMS. Based on our QIP findings, a business proposal has been submitted for employing an AMS pharmacist dedicated for AMU.

Mixed growth laboratory culture results for Urinary Tract Infections in pregnant women – masking true infection?

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Introduction

Pregnant women are at increased risk of suffering from urinary tract infections (UTI), with potentially serious consequences including pyelonephritis, pre-term birth and, rarely, pregnancy loss or maternal sepsis (Werter et al., 2024). UTI symptoms can be challengingly vague in this patient group. Generally, if a woman presents with symptoms and/or a positive dipstick result, an MSU will be requested and sent for laboratory microbiology analysis.

'Mixed growth (MG)' results are returned for a significant portion of samples. Generally considered to be contamination, these results are clinically ambiguous.

Our aim was to use enhanced culture techniques (EQUC) to better characterise the bacteria in the urine of pregnant women. We hypothesised that MG samples may be masking significant numbers of clinically significant bacteria.

Methods

Eligible urine samples were plated out using various media and growth conditions, as per the standard EQUC protocol. Bacterial species was confirmed using mass spectrometry. Clinical notes (symptoms/dipstick results) were recorded where available. No patient information was recorded. EQUC results were compared to standard laboratory culture results. Sample size was 40.

Results

Of the 40 samples, 21 returned a MG result using standard laboratory culture analysis for UTI. Six were classed as 'No significant growth (NSG)', eight were negative and five were positive for a single organism.
Of the 21 MG samples, 14 had NSG after EQUC, but 7 returned significant growth for one or more pathogens. These included: 2 samples positive for Proteus (10^3 – 10^4 CFU per ml); one sample positive for E.coli (10^4 – 10^5 CFU per ml); one sample positive for Klebsiella pneumoniae (10^3 – 10^4 CFU per ml); one sample positive for Streptococcus anginosus ((10^4 – 10^5 CFU per ml); one sample positive for Aerococcus sanguinicola (10^4 – 10^5 CFU per ml); and one sample positive for Proteus and S.haemolyticus (10^4 – 10^5 CFU per ml).
Of the six NSG samples, three were positive in EQUC for Streptococcus spp or Lactobacillus, and three had NSG in EQUC. None of the eight samples negative in laboratory culture returned positive growth using EQUC.
Six of the seven women who had MG results for standard culture analysis but were positive in EQUC had either symptoms, or positive dipsticks, or both. One woman had no clinical information recorded. MG results using standard culture techniques may be masking siginificant bacteriuria, resulting in missed infections in this high-risk patient group.

A Multi-Centre Quality Improvement Initiative Evaluating Diagnostic and Therapeutic Pathways for Malaria

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Background
Malaria remains a clinically significant imported parasitic infection in the United Kingdom, requiring prompt diagnosis and timely initiation of evidence-based therapy to prevent adverse outcomes. Delays in laboratory reporting, specialist consultation, and deficiencies in clinical documentation were previously identified through a local quality improvement initiative at Queen Elizabeth Hospital Birmingham (QEHB). These findings highlighted system-level inefficiencies and underscored the need for broader evaluation of malaria management across multiple centres. This project aimed to assess diagnostic and therapeutic pathways for adult malaria cases presenting to QEHB and Birmingham Heartlands Hospital (BHH) over a three-year period. Primary objectives included characterisation of Plasmodium species distribution. Secondary objectives comprised evaluation of disease severity, parasitaemia burden, length of stay, and identification of prescribing delays and discrepancies in antimalarial therapy.

Methodology
We conducted a retrospective observational quality improvement study of all laboratory-confirmed malaria cases diagnosed between 1 January 2023 and 31 December 2025 across QEHB and BHH. Paediatric patients (<18 years) and suspected cases with negative results were excluded. Data were extracted from electronic clinical and laboratory records, including demographics, travel history, diagnostic timelines, parasitaemia levels, management details, and prescribing accuracy.

Ninety-one adult patients met inclusion criteria. All reported recent travel, most commonly to African countries, with Nigeria accounting for 35% of cases, followed by Congo, Sudan, and Sierra Leone. Among Asian destinations, Pakistan represented 15%, followed by India and Bangladesh. A history of mosquito bites was documented in 38%. Malaria was the initial working diagnosis in 64% of presentations. Rapid diagnostic testing was positive in all cases; parasites were not visualised on blood film in three. Plasmodium falciparum was predominant (66%), followed by P. vivax (27%). Eleven patients (12%) had parasitaemia >2%, and two required intensive care admission.

Results
Prescribing errors or missed doses were identified in 38% of cases. The mean time from laboratory diagnosis to first antimalarial dose was seven hours. Delays were primarily attributable to drug stock issues and prescribing inaccuracies. The mean length of stay was three days.

Conclusion
Although diagnostic confirmation was consistent across both sites, therapeutic inefficiencies persist. A 38% prescribing error rate and seven-hour mean treatment delay represent modifiable patient safety risks. Implementation of standardised malaria pathways, mandatory infectious diseases consultation, electronic prescribing order sets with dose validation, improved pharmacy stock governance, and regular multidisciplinary audit cycles are recommended to optimise outcomes in imported malaria within UK secondary care settings.