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leading to death as documented on the medical certificate of confirmation of death (MCCD) were respiratory tract infections, sepsis and COVID-19.

In total, 4.2 % (32/758) of all deaths were AMR-attributable. AMR-attributable deaths were more commonly recorded in patients admitted under haematology (7.5 %, 9/120) and in younger patients (median age 67 versus 72, p = 0.01). The median time from the index sample collection until death was 4.5 days (IQR 2–10.5 days). The majority of AMR-attributable deaths (56.3 %, 18/32) were caused by treatment failure and subsequent treatment delay caused by intrinsic resistance mechanisms, primarily by Enterococcus faecium (38.9 %, 7/18), Enterobacterales carrying repressed chromosomal AmpCs (27.7 %, 5/18) and Pseudomonas aeruginosa (22.2 %, 4/18). On the contrary, a minority of AMR-attributable deaths (43.7 %, 14/32) were caused by acquired resistance mechanisms, primarily derepressed AmpCs (28.6 %, 4/14) and ESBLs (21.4 %, 3/14). The median time to effective treatment was 32 h 15 min and did not differ significantly between the two groups. Only 62.5 % (20/32) of AMR-attributable deaths as judged by study investigators had infection recorded on the MCCD. AMR was not recorded as a cause of death in any of the patients, including the 14 patients who were deemed to have suffered deaths due to acquired resistance by the study investigators.

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35 Tackling the infection specialty workforce crisis; the Royal Devon University Healthcare NHS Foundation Trust (RDUH) approach

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Introduction

Infection specialities are experiencing a crisis in workforce and succession planning, with hospitals struggling to fill consultant posts; 17.5 % of all funded FTE consultant-level posts are currently vacant. There needs to be improved recruitment into training to enable expansion of both training and consultant posts. On a national level, the Royal College of Pathologists (RCPath) sought to engage medical students by increasing their pathology exposure in the undergraduate curriculum, establishing the RCPath Foundation Fellowship Scheme and promoting recruitment of clinical scientists. However, there is a need for a local recruitment drive, especially for less favoured parts of the country outside London.

The RDUH Microbiology and Infection department was amongst the first to have microbiology F2s; of whom a large percentage choose to pursue an infection career, with five consultants to date. Prospective medical students on an annual work experience week are invited to join the clinical team and view the laboratory; one has successfully pursued a microbiology career. Our presentation will focus upon the different ways in which we have successfully enhanced interest and recruitment within these trainee groups.

Methods/Results

At an undergraduate level, we offer dedicated six-week placements. F2s have the opportunity to undertake taster days/weeks. We currently have our third trainee clinical scientist in training. Feedback from all trainees has consistently been extremely positive.

The latest venture, an F2 Regional training day in Microbiology and Infection, was designed and hosted by the RDUH Microbiology department 23/01/2024 with maximum capacity achieved. Presentations on infection were delivered by RDUH Infection Consultants and F2s invited to present interesting cases, all receiving certificates/commendations for their portfolios. Attendees rated the day as 5/5 (1 = poor, 5 = excellent). Trainees were surveyed about their interest in infection specialities as a career; 21 % were interested pre-event, rising to 78 % post-event, demonstrating a significant increase. Moreover, we now have 5 attending taster days who express a definite interest in pursuing a career in infection.

Conclusion

As with other specialities, it is essential to increase recruitment to enable us to provide the best quality of care for patients and prevent current workforce burnout. It is crucial that infection doctors endeavour to inspire medical students, junior doctors and clinical scientists to undertake infection training and support them in attaining training posts. The RDUH Microbiology department have demonstrated that local incentives can significantly promote infection specialities as a career choice through positive experiences and encourage other trusts to do the same.

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38 The development of protective immunity to *Streptococcus pyogenes* in a high-burden community in The Gambia

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Background

Understanding naturally occurring immunity to *Streptococcus pyogenes* (StrepA) in rheumatic heard disease (RHD)-endemic settings is critical for developing safe and effective vaccines against StrepA.

Objectives

To characterise (i) the evolution of antibody immunity against StrepA conserved antigens across the life course, (ii) induction and boosting of immunity following StrepA carriage and disease, and (iii) blood and mucosal protective antibody responses.

Methods

We conducted a year-long longitudinal household cohort survey involving 442 individuals from 42 households in The Gambia. Monthly routine skin and throat swabs were collected for StrepA detection, with additional swabbing during disease episodes. Serum, dried blood spot (IgG) and oral fluid (IgG/IgA) antibodies were quantified using a Luminex 5-Plex assay against conserved vaccine antigens SLO, SpyCEP, SpyAD, and GAC, as well as DNAseB. Samples were tested at baseline, before during and after events, and in all household contacts of

StrepA-positive index cases. Serum was also tested longitudinally from a cohort of mother-child pairs at delivery and during first year of life. Mixed effects logistic regression models were used to define antibody titres associated with reduced likelihood of StrepA events, accounting for repeated sampling from individuals.

Results

Waning of passively-acquired maternal IgG occurred during the first year of life, with boosting observed in 23 % of infants between 6 and 11 months, indicative of early life exposure to StrepA. Despite significant heterogeneity, serum IgG titres peaked by age five, contrasting with StrepA-specific oral fluid IgA, which continued to rise into adulthood at a slower rate. Following StrepA events, IgG titre increases were most pronounced in children <2 years following episodes of skin infections. Oral fluid IgA responses showed greater heterogeneity around events, with increases observed in participants with low pre-event titres, regardless of age. Reduced odds of StrepA events in the following 45 days was associated with higher titres of SpyCEP blood IgG (OR 0.39, 0.23–0.68) and SpyAD oral fluid IgA (OR 0.37, 0.22–0.61).

Conclusions

Our findings suggest that heavy exposure in early life is associated with rapid rises in titres to conserved vaccine antigens in an RHD-endemic setting. Skin carriage and infections were common in children under 5 years old and likely responsible for immune priming and boosting in childhood. Higher blood IgG titres to SpyCEP and oral fluid IgA titres to SpyAD were associated with protection from Strep A events. These data are supportive and encouraging for StrepA vaccines in development including these conserved antigens.

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52 An unusual presentation of group B streptococcus in pregnancy, with meningitis and skull-base osteomyelitis

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Case

A pregnant female in her 30s, with a history of cocaine use, presented with collapse, seizure activity and reduced consciousness. She was febrile with raised inflammatory markers (WCC 18.2, CRP 70). MRI brain revealed cerebritis with diffuse meningitis and ventriculitis. CT showed new erosion of the sphenoid bone, nasopharynx and dorsal clivus with nasal septal destruction, suggesting acute infection on possible chronic osteomyelitis, alongside evidence of cocaine use. She was commenced on intravenous ceftriaxone, amoxicillin, liposomal amphotericin and aciclovir.

CSF analysis revealed a white cell count of 2,268/mm*3 (95 % polymorphs). There was no growth on culture. BioFire FilmArray Meningitis/Encephalitis PCR panel was positive for group B streptococcus (GBS) from the CSF sample. Subsequent nasal tissue culture also isolated GBS.

Following identification of GBS on PCR, antimicrobials were rationalised to ceftriaxone monotherapy, and she completed three months' therapy with teicoplanin, then clindamycin due to drug reactions. The baby was subsequently delivered with no complications. There were no possible surgical management options for her skull base osteomyelitis, with strong suggestion for cessation of cocaine use to allow healing of the nasal mucosa.

Discussion

GBS is an unusual cause of meningitis in immunocompetent adults (Van Kassel et al., 2019), accounting for approximately 1.3 % of adult bacterial meningitis burden (Van Kassel, 2019), although has significant associated mortality (27–34 %) (Khan, 2016). GBS meningitis is most associated with immunocompromise, CSF leakage and infective endocarditis.

Skull base osteomyelitis is also rare and most often associated with chronic sinusitis and otitis media. It can be difficult to distinguish from malignant bony destruction, such as was the case here.

This case represents an unusual presentation of GBS meningitis with associated osteomyelitis, in an immunocompetent individual, though with some pre-disposing risk factors (long-term cocaine use). It also highlights the importance of rapid diagnostics in challenging clinical cases of CNS infection. Once available, the CSF PCR panel enabled timely diagnosis and targeted treatment, a diagnosis which may previously have relied on 16S PCR, often with long turnaround times, in the context of negative cultures.

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56 Persistent cluster of carbapenemase-producing Klebsiella pneumoniae among patients attending hospital ward X in England

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Background

Carbapenemase-producing Enterobacterales (CPE) can be associated with persistent outbreaks in healthcare settings, causing infections which are difficult to treat with standard antibiotics. We investigated a cluster of NDM-1 containing Klebsiella pneumoniae cases in an augmented-care setting.

Methods

Cases were defined as patients admitted to ward X since July 2020 with a laboratory confirmed infection/colonisation with sequence type 15 (ST15) K. pneumoniae with NDM-1 as identified through whole-gen-