London, East Midlands, West Midlands and Scotland had estimated incidences above the national incidence. Boys (91/130; 70%) were significantly more affected than girls (39/130; 30%) and the majority were of Black (44.6%) and South Asian (36.2%) ethnicity with a median age of 18 months. The commonest clinical presentations were bowed legs, swollen wrists and radiological rickets. Comorbidities included fractures (15/130; 11.5%) hypocalcaemic seizures (11/130; 8.5%), and dilated cardiomyopathy (4/130; 3%). Two children died of dilated cardiomyopathy from vitamin D deficiency. The commonest associated conditions were cows milk protein allergy (19/51; 19%;) iron deficiency (8/51; 7%) and eczema (8/51; 7%). At the time of diagnosis 77% of children were not receiving vitamin D supplements. 19 children had rickets despite being reported to be receiving appropriate supplementation. All confirmed radiological cases had either high parathyroid hormone and/or low phosphate. Following diagnosis, most clinicians initially prescribed treatment themselves, with huge variation in duration of prescriptions. In a further 10 cases, rickets was confirmed but excluded in the incidence analysis, for not meeting the case definition (specifically Vitamin D <25 OHnmol/L), suggesting both dietary calcium deficiency and vitamin D insufficiency as role-players in the presentation of NR in the UK.

Conclusions NR continues to affect children in the UK with serious sequelae. Uptake of vitamin D supplementation remains low and constitutes a failure of current public health policy. A UK national policy focusing on vitamin D and calcium supplementation and adherence is required to eliminate this entirely preventable condition.

British Paediatric Allergy, Immunity and Infection Group

G52

NICE IN THEORY, BUT WHAT ABOUT IN PRACTICE? OUR EXPERIENCE OF THE NEW SEPSIS GUIDELINES

¹MJ Carter, ¹PA Stilwell, ²R Nijman, ¹S Eisen. ¹Children and Young People's Services, University College London NHS Foundation Trust, London, UK; ²Section of Paediatrics, Imperial College London, London, UK

10.1136/archdischild-2018-rcpch.50

Aims NICE (2016) guidance on the recognition, diagnosis and early management of sepsis aims to expedite interventions in children with 'high-risk criteria' for sepsis. Early administration of parenteral broad-spectrum antibiotics is recommended in these children, unless a senior decision-making doctor (ST4+) makes an alternative diagnosis with a separate treatment pathway. We assessed the presenting characteristics and management of children at UCLH NHS Foundation Trust (UCLH) Paediatric Emergency Department (PED) following the introduction of these guidelines. A senior decision-making doctor was available for urgent review of children at all times.

Methods We audited the notes of all children presenting to UCLH PED from 6th February to 31st May 2017 (excluding simple trauma or primarily psychosocial presentation). All notes of children with fever or suspicion of infection and one or more high-risk criterion for sepsis were identified on a daily basis, and data entered onto a specific database. High-risk criteria were as defined by NICE, and included: tachypnoea (≥ 99 th centile), tachycardia (≥ 99 th centile), additional

oxygen requirement, reduced consciousness, reduced urine output and blood lactate ≥ 2 mmol/L.

Results 4322 children presented to the PED during the time period. Of these, 216 (5.0%) met one or more high-risk criteria for sepsis. The most common clinical syndrome was viral upper respiratory infection (67 children, 31%). Severe tachycardia was the most prevalent high-risk criterion (159 children, 73%). 25 children (12%) underwent blood testing/IV access, 17 (7.8%) were administered parenteral antibiotics, six (2.8%) were administered intravenous fluid boluses, 16 (7.4%) were admitted to the ward, and one child was transferred to intensive care (in status epilepticus). One child (admitted) had a bacterial pathogen isolated from blood.

Conclusion In this single centre, only 12% of children with one or more high-risk criteria for sepsis underwent blood testing, and 7.8% of children were admitted for parenteral antibiotics. Appropriate de-escalation from the sepsis pathway prevented the admission of an additional two children per day for parenteral antibiotics for presumed sepsis. Given the small proportion of children with high-risk criteria who were deemed to require treatment for sepsis, the availability of appropriately senior decision-making doctors is essential to enable appropriate implementation of these guidelines.

G53

EPIDEMIOLOGICAL AND MICROBIOLOGICAL TRENDS IN CANDIDAEMIA IN A TERTIARY PAEDIATRIC UK HOSPITAL

¹JL Wright, ²S Paulus. ¹General Paediatrics, Glan Clwyd Hospital, Rhyl, UK; ²Paediatric Infectious Diseases, Alder Hey Children's Hospital, Liverpool, UK

10.1136/archdischild-2018-rcpch.51

Aims To describe the demographics of patients diagnosed with candidaemia, and to explore speciation and susceptibility trends in *Candida* organisms grown in blood cultures over 15 years in a single tertiary care paediatric hospital in the UK.

Method Local laboratory records were accessed to obtain data about all positive blood cultures for *Candida* species between January 2001 and December 2015. A retrospective analysis of available electronic medical records was completed. Data was input and analysed using Microsoft Excel.

Results There were 192 episodes of candidaemia, with 23 patients having multiple episodes of candidaemia (i.e. separated by >30 days). Patient's ages ranged from 5 days to 18 years, with a mean of 5 years and 6 months. There were 85 females (44%) and 107 males (56%).

The patient's locations at the time of the candidaemia varied from the general paediatric wards (61, 32%), haematology/oncology wards (52, 27%), ICU (49, 26%), and paediatric surgical wards (30, 16%). The outcome of the patients after 30 days showed that 85 remained in hospital (44%), 81 had been discharged home (42%) and 26 had died (14%).

The two most common *Candida* species identified were *Candida albicans* (96, 50%) and *Candida parapsilosis* (56, 29%). There was a lower incidence of recognised resistant species such as *Candida lusitanae* (9, 5%), *Candida glabrata* (7, 4%), and *Candida krusei* (3, 2%) with no increase in incidence of these species seen over time.

The majority of samples (181, 94%) underwent sensitivity testing for a selection of seven common antifungal medications (amphotericin, caspofungin, fluconazole, flucytosine, itraconazole, micafungin and voriconazole). Eight samples of *Candida*

albicans had resistance to a specific antifungal: 2 to fluconazole, 1 to flucytosine, 4 to itraconazole and 1 to voriconazole. No samples of *Candida parapsilosis* had resistance to any of the antifungals tested, however 16 had intermediate resistance to caspofungin.

Conclusions This 15 year study of candidaemia in a tertiary paediatric hospital shows that almost 80% of the cases were due to *Candida albicans* or *Candida parapsilosis*. Resistant *Candida* species and overall resistance to antifungal medication was uncommon and did not show any increasing trend over time.

G54

IMPACT OF PNEUMOCOCCAL CONJUGATE VACCINES ON PNEUMOCOCCAL MENINGITIS IN ENGLAND AND WALES, 2000 – 2016

^{1,2}G Oligbu, ³A Djennad, ¹S Collins, ⁴CL Sheppard, ⁴NK Fry, ⁵R Borrow, ³NJ Andrew, ^{1,2}S Ladhani. ¹Paediatric Infectious Diseases Research Group, Institute for Infection and Immunity, St George's, University of London, UK; ²Immunisation, Hepatitis and Blood Safety Department (IHBSD), Public Health England, London, UK; ³Statistics, Modelling, and Economics Department, Public Health England, London, UK; ⁴Respiratory and Vaccine Preventable Bacterial Reference Unit (RVPBRU), Public Health England, London, UK; ⁵Vaccine Evaluation Unit, Public Health England, Manchester Medical Microbiology Partnership, Manchester Royal Infirmary, Manchester, UK

10.1136/archdischild-2018-rcpch.52

Introduction The introduction of pneumococcal conjugate vaccines (PCV) was associated with reduction in incidence of invasive pneumococcal disease (IPD) especially IPD caused by the vaccine serotypes. Its impact on meningitis in the United Kingdom has not been assessed.

Methods Public Health England conducts enhanced surveillance for IPD and provides a national reference service for serotyping pneumococcal isolates in England and Wales. Data were extracted for isolates from confirmed IPD cases between 1 st July 2000 and 30th June 2016, covering the 2000/01 to 2015/16 epidemiological years. Incidence rate ratio (IRR) and case fatality rate (CFR) were calculated. Multivariable logistic regression was used to calculate the odds of meningitis and assessed its association with death.

Results There were 80 313 laboratory-confirmed IPD cases over the 16 year surveillance period, including 4160 cases (4.9%) with meningitis. Of the 4108 with reported age, 1611 (39.2%) cases were reported in children aged <5 y, 1729 (42.1%) in 5–64 year-olds and 768 (18.7%) cases in 65+ year olds. This compares with 8324 (10.5%), 32 297 (40.6%) and 38 999 (49.0%) of 79 620 non-meningitis cases during the same period, respectively ($p < 0.001$).

PCV7 introduction in September 2006 had no impact on the overall incidence of pneumococcal meningitis (0.55/100,00 during 2000/01–2005/06 vs 0.56/100,000 during 2008/09–2009/10) because of serotype replacement disease. PCV7 replacement with PCV13 in April 2010, however, led to a 48% (95% CI: 38%–62%) reduction in pneumococcal meningitis incidence by 2015/16, whilst meningitis cases due to non-PCV13 serotypes remained static.

The overall CFR was 17.5% (631/3,611, increasing from 10.7% (150/1408) in <5 y to 17.3% (262/1517) in 5–64 y and 31.9% (219/686) in 65+ year olds. This compared with 3.6% (254/716), 10.8% (3,235/30,090) and 30.6% (11,292/36,907) for non-meningitis for the same age groups,

respectively. CFR for meningitis due to PCV7 serotypes (130/916, 14.2%) compared to PCV13 (143/793, 18.0%) or non-PCV13 serotypes (290/1,534, 18.9%). Among meningitis cases, serotype 8 was associated with increased odds of death (aOR, 2.91; 95% CI: 1.79 to 4.71; $p < 0.0001$).

Conclusions The impact of PCV on pneumococcal meningitis has been less prominent than for other IPD presentations and case fatality remains high; a different strategy is, therefore, required to reduce the burden and outcomes of pneumococcal meningitis.

G55

EVALUATING THE RISK OF LACERATION WHEN USING AN ADRENALINE AUTO-INJECTOR TO TREAT ANAPHYLAXIS VIA THE TWO STANDARD METHODS OF ADMINISTRATION

¹L Pike, ²D Tuthill. ¹School of Medicine, Cardiff University, Cardiff, UK; ²Department of Paediatrics, Noah's Ark Children's Hospital of Wales, Cardiff, UK

10.1136/archdischild-2018-rcpch.53

Aims Anaphylaxis is a severe and potentially fatal, systemic allergic reaction. Adrenaline is the treatment of choice, usually given via an adrenaline auto-injector (AAI). Concerns over lacerations to young children moving their leg whilst being given an AAI by the recommended 'swing and jab' (S and J) method led to this service evaluation of the two methods of administering AAIs; S and J and 'push and press' (P and P).

Methods A training EpiPen[®] and paint was used to evaluate the methods. Paint was placed in the centre of the training pen, any excess removed from the 'needle' indentation and left flush with the bottom of the pen. Children aged 5–11 had both methods 'administered' to their outer thigh on bare skin. They were asked to move their leg when the pen fired in order to simulate real injections. The method used first was alternated between successive participants. Age, movement and length of paint mark (± 0.1 mm) were recorded. The mean measurement of paint marks made by no movement was calculated and subtracted from all measurements leaving the distance the AAI moved. Analysis was conducted using IBM[®] SPSS[®] Statistics version 23.

Results 135 children (mean age 8 years) were asked to take part; measurements were taken from 100 (74%). 50 children (50% of participants) moved for one or both methods; 32 (32%) moved for both methods. 18 (18%) moved for either S and J (12 children), or P and P (6 children). The number of children who moved for each method was significantly different (chi-squared: $p = 0.033$). S and J had a mean movement of 8.3 mm (95% CI: 3.4 to 13.3); P and P had a mean of 3.5 mm (95% CI: 0.4 to 6.6). The mean difference between methods for those that moved was 4.8 mm (95% CI: 1.9 to 7.7) and paired samples T-test showed $p = 0.001$.

Conclusion This evaluation showed a statistically significant difference in the length of marks made by S and J and P and P. Previous cases showed that there is a risk of laceration when administering EpiPen[®] to young children using the recommended 'swing and jab' method and therefore this evaluation suggests it may be advisable to change to teaching 'push and press' to carers who administer adrenaline auto-injectors to young children.