known allergen and incorrect use of their autoinjector suggests a need to improve education. This project demonstrates that lack of trainee knowledge translates into clinical reality. We believe that improving trainee knowledge is vital in improving the management of anaphylaxis and as well as enabling doctors to educate patients and relatives.

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MONITORING OF HEALTHCARE-ASSOCIATED INFECTION OUTBREAKS IN NEONATAL UNITS IN ENGLAND

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¹M Edelstein, ²C Kortsalioudaki, ¹A Johnson, ¹R Hope, ¹A Chickowska, ²M Sharland. ¹Health Protection Agency, London, UK; ²Paediatric Infectious Diseases Research Group, Division of Clinical Sciences, St George's University of London, London, UK

Aims Outbreaks of healthcare-associated infection (HCAI) in neonatal units (NNUs) have a significant burden of morbidity and mortality and cause substantial disruption and cost to neonatal networks. The number of NNU HCAI clusters in 2011 in England, their size and causative organisms, were estimated using currently available surveillance tools.

Methods Data derived from voluntary laboratory reporting (Lab-Base 2), national reference laboratories and a Health Protection Agency outbreak reporting tool (HPZone) were searched to identify potential NNU HCAI clusters. The analysis was limited to the most likely causative organisms (*S. aureus*, *Enterobacter* spp., *E. coli*, *Acinetobacter* spp., *Klebsiella* spp., *Pseudomonas* spp., *Serratia* spp.). Clusters were defined as: (i) any neonatal cluster or outbreak reported in HPZone; (ii) laboratory reports of at least 2 isolates originating from the same hospital and sharing the same VNTR or strain type, with at least one case below the age of 28 days, and with a maximum of 14 days between two cases, and (iii) 2 or more reports of the same infection in neonates in the same hospital in a 14 day period in Lab-Base. Cross linkage of the 3 data sources was then attempted.

Results 116 neonatal clusters including both colonisation and invasive disease were identified, involving at least 666 neonates. 43.4% of the clusters were MRSA, followed by MSSA (26%), *E. coli* (13%), *Enterobacter* (12%), and *Pseudomonas* (10%). There were on average 9.2 neonatal clusters per month (range 0–14). The median number of babies per cluster was 3 (range 2–80). When only bacteraemia samples were considered, *E. coli* was the most common organism accounting for 57% of clusters. The study likely underestimates the number of clusters due to a lack of standardised reporting. It was not always possible to fully characterise the clusters as formal outbreaks due to data limitations.

Conclusion This analysis identified a high number of HCAI clusters in English NNUs. A standardised approach to the definition, reporting, management and surveillance of NNU HCAI outbreaks is required to enable reliable outbreak detection and appropriate action.

G89

VERY LOW RATES OF SERIOUS INVASIVE BACTERIAL INFECTIONS IDENTIFIED IN A PROSPECTIVE THREE-YEAR SOUTH WEST LONDON AND SURREY POPULATION-BASED SURVEILLANCE PROGRAMME

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¹K Le Doare, ²AL Nicholls, ²H Payne, ¹S Navidnia, ¹G Appleby, ³E Carlton, ¹M Sharland, ^{1,4}S Ladhani. ¹St George's Hospital, London, UK; ²Croydon University Hospital, Croydon, UK; ³St Helier Hospital, Carshalton, UK; ⁴HPA, Colindale, UK

Aims Following the introduction of conjugate childhood vaccines and declining trends in meningococcal disease over the past decade, community-acquired serious invasive bacterial infections in children have become less common but hospital admissions continue to rise. The objective of this study was to estimate the incidence of serious culture-confirmed invasive bacterial infections in children within a geographically-defined population over a three-year period.

Methods Blood and cerebrospinal fluid culture (CSF) results for all children aged 1 month to 16 years admitted to five South-West London (SWL) and Surrey hospitals during 2009–11 were obtained at regular intervals from each hospital microbiology department and a web-based questionnaire completed for all children with a positive culture. Hospital-acquired infection was defined as a significant pathogen isolated from a blood/CSF culture taken >48 hours after hospital admission.

Results During 2009–11, 44,118 children had 46,039 admissions to one of the five Hospitals, equivalent to 25.8 admissions per 1,000 children resident in SWL and Surrey. Blood/CSF cultures were obtained during 44.7% (n = 20,578) of admissions and 7.4% (n = 1,530) had a positive culture. Of these, only 571 were defined as a clinically significant serious bacterial infection (SBI), equivalent to 37.3% of positive blood/CSF cultures, 2.8% of all blood/CSF cultures taken and 1.2% of all hospital admissions. The population incidence of SBI in SWL and Surrey was, therefore, 31.9/100,000, with the highest incidence among 1–11 month-olds (172/100,000), followed by 1–4 year-olds (34.3/100,000) and 5–15 year-olds (16.4/100,000). A third of the SBI (208/571, 36.4%), however, were hospital-acquired and, of the community-acquired infections, more than two-thirds (252/363, 69.4%) occurred in children with co-morbidities. The incidence of community-acquired SBI in previously healthy children in SWL and Surrey was, therefore, only 6.2/100,000, with the highest incidence among 1–11 month-olds (33.9/100,000), followed by 1–4 year-olds (6.5/100,000) and 5–15 year-olds (3.2/100,000).

Conclusions Although a SBI was suspected in almost half of all childhood hospital admissions in SWL and Surrey, a significant pathogen was identified in only 3%, mainly among children with pre-existing co-morbidities. Improved targeting of children at very low risk of a SBI at presentation will facilitate increased management of unw.

G90

RANITIDINE TREATMENT IN PRETERM INFANTS AND THE PREVALENCE OF ATOPY AT TWO YEARS OF AGE

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T Soe, L Bemand-Qureshi, S Chaudhry, V Chakravarti. *Paediatrics, Princess Alexandra Hospital, Harlow, UK*

Background Acid suppression treatment has been linked to an increased incidence of allergy in adults. We evaluate how ranitidine, widely used off-label to treat gastro-esophageal reflux symptoms in neonates, may impair peptic digestion, increasing the risk of sensitization to digestion-labile food antigens and thus increasing the prevalence of atopy.

Methods We carried out a retrospective review of preterm infants of between 26 and 37 weeks gestation admitted over a two-year period between April 2008 and March 2010. Those preterm infants treated with the H₂-receptor antagonist ranitidine for more than seven days were identified. A control group of preterm infants who did not receive treatment was selected by matching gestation, birth weight and disease severity using a validated scoring method. We analysed both maternal data (mode of delivery, use of intrapartum antibiotics, prolonged rupture of the membranes, sepsis) and neonatal data (birth weight, gestation, interventions,

sepsis, type of feeding and neonatal complications). Information concerning the development of atopy in children in both groups, as well as any family history of atopy, was obtained through a simple questionnaire.

Results There were 38 infants in the group treated with ranitidine (exposure group) and 37 in the control group. There was no significant difference in perinatal characteristics and neonatal morbidity between the two groups. The prevalence of atopy was 39% in the exposure group and 47% in the control group ($p = 0.57$). Subgroup analysis showed the prevalence of milk allergy was 17% in both groups and Non Significant (NS); the prevalence of atopic eczema was 18% (exposure) vs 45% (control) ($p < 0.001$); and the prevalence of recurrent wheeze or asthma was 13% (exposure) vs 11% (control) (NS). Prevalence of other food allergies was very low and comparable. No difference in the family history of atopy was observed.

Conclusions Ranitidine treatment in preterm infants did not increase the overall prevalence of atopy at two years of age but a significantly lower prevalence of atopic dermatitis was observed in the group treated with ranitidine.

G91 A RETROSPECTIVE STUDY OF CHILDREN WITH ACUTE ENCEPHALITIS

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K Eayrs, H Edmond, D Kelly. *Department of Paediatrics, Oxford University Hospitals, Oxford, UK*

Background and Aims Encephalitis is a relatively rare but potentially devastating condition¹. Our study investigated the presentation and management of children with encephalitis presenting to a tertiary UK hospital.

Methods Cases of encephalitis presenting during 2001 – 2009 were identified using clinical coding records and a clinical database maintained by the paediatric infectious diseases team. Inclusion criteria were children between the ages of 3 months to 16 years who presented with an acute encephalopathy. A retrospective case notes review was performed and management compared to local infectious disease guidelines for children with an unexplained acute encephalopathy.

Results 71 cases were identified and notes were found in 58 cases. 29 cases met the study criteria.

The commonest presenting features were confusion (86%), fever (69%), seizures (62%) and headache (60% in those aged over 5 years).

Microbiological and metabolic workup was inconsistent in relation to the local hospital guidelines. In particular exclusion of metabolic causes of acute encephalopathy was fully undertaken in only 28% of children. Confirmed or probable infectious aetiologies were identified in 21 cases (72%) with HSV (17%), VZV (10%) and EBV (7%) being the most commonly identified pathogens. Other final diagnoses included Acute Disseminated Encephalomyelitis (14%).

With regards to treatment, 97% of children were started empirically on aciclovir although 43% were prescribed half or less of the recommended dose for encephalitis. Anti-microbial use was also inconsistent between cases: ceftriaxone was started in 76%, azithromycin in 34% and amoxicillin in 12%.

Conclusion The initial investigation and management of children with an acute encephalopathy who are subsequently diagnosed with encephalitis did not fully follow the guideline in 76% of cases. The most important finding was the high incidence of inadequate aciclovir dosing in the empirical treatment of children with suspected encephalitis. Recently published guidance highlights the importance of a full clinical, microbiological and metabolic work up and emphasises the correct aciclovir dose¹. Although

encephalitis is an uncommon condition, awareness of its management is vital to prevent the high morbidity associated with the disease.

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G92 PRESCRIPTIONS OF ORAL PENICILLINS FOR CHILDREN: EVIDENCE OF WIDESPREAD DOSING VARIATION IN PRIMARY CARE

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^{1,2}S Saxena, ³Z Ismael, ⁴CIS Barker, ⁵ML Murray, ⁶ICK Wong, ⁷M Sharland, ^{3,8}PF Long. ¹Chartfield Surgery, Putney, London, UK; ²Department of Primary Care and Public Health, Imperial College London, London, UK; ³Institute of Pharmaceutical Science, King's College London, London, UK; ⁴Paediatric Infectious Diseases Research Group, St George's, University of London, London, UK; ⁵Centre for Paediatric Pharmacy Research, University College London School of Pharmacy, London, UK; ⁶Department of Pharmacology and Pharmacy, The University of Hong Kong, Pokfulam, Hong Kong, China; ⁷Paediatric Infectious Diseases Unit, St George's Hospital, London, UK; ⁸Department of Chemistry, King's College London, London, UK

Aims The British National Formulary for Children (BNFC) provides recommendations for dosing oral penicillins in children according to age-bands, weight-bands, and weight-based calculations. However, as childhood obesity is increasingly prevalent, dosing by age-bands could lead to clinically significant under-dosing. This study aimed to determine how current UK GP prescribing practise follows the original age-band dosing recommendations, which could lead to sub-therapeutic dosing.

Methods Detailed prescriptions for the oral penicillins in 0–18 year-old children from 2010 were analysed from the IMS Disease-Analyzer database, which contains computerised medical records from 125 general practises, representing approximately 2% of the UK population. It includes data on formulation, strength, prescription quantity unit, package size, prescribed quantity and volume.

Results For 2010, 388,926 patients aged 0–18 years were registered on the database (51% male), accounting for 376,292 person-years in total. There were 65,737 prescriptions for oral penicillins identified: amoxicillin (63%), penicillin V (17%) and flucloxacillin (20%).

The amoxicillin prescription results by age-band (as an example) showed:

1. In the first age-band of less than 1 year, no child received an amoxicillin prescription for the recommended unit dose of 62.5 mg; the majority received double the unit dose (125 mg);
2. In the second age-band of 1 to 5 years, 96% received prescriptions for the recommended unit dose (125 mg);
3. 40% of 6–12 year-olds and 70% of 12–18 year-olds were prescribed unit doses below those recommended in the BNFC for their age-band.

Prescriptions for otitis media were analysed separately. As patient weight was not available, average weights were used for the analysis (based on the 2010 Health Survey of England), and the dose in mg/kg/day was calculated. From these data, only children less than 1 year received the recommended BNFC dose of 40–90 mg/kg/day. For children aged 4–15 years, the prescriptions equated to 10–20 mg/kg/day, approximately 33% of the recommended dose.

Conclusions These results demonstrate wide variation in the dosing of penicillins for children in primary care. There is an urgent need to review and simplify current dosing recommendations according to age-bands and weight-bands, in relation to the average weights of children today.