rickets appeared curable by both cod liver oil and exposure to sunlight. The link between vitamin D and sunlight exposure remained elusive until two years later when Steenbock and Black were able to demonstrate that ultraviolet irradiation of Vitamin D containing food increased its activity.

With scientific evidence and support, governments justified the commencement of a public health initiative fortifying common foodstuff with vitamin D, resulting in the near eradication of rickets in the USA and Canada. In the UK, mandatory fortification was legislated in 1940 when cases of rickets rose due to widespread malnutrition. Worsening air quality as a result of industrialisation was proposed to be a significant contributor to rickets by limiting exposure to UVB radiation. The introduction of the 1956 Clean Air Act, alongside fortification, is believed to have thus contributed to a reduction in the incidence of rickets. A series of deaths from idiopathic infantile hypercalcaemia in the years following raised concerns of an 'epidemic of hypercalcaemia' and led to a ban in fortification in 1953, with the exception of margarine, cereals and infant formula milk.

Conclusions Today, Public Health England (PHE) advises that children over the age of 5 years require an average of 10 µg of vitamin D a day and should consider daily supplements during autumn and winter. However, with a new rise in the prevalence and incidence of nutritional rickets recently highlighted in the UK, over the last two decades, it brings into question whether we are doing enough to implement the current policy or the policy needs adapting. Future changes may require increasing awareness of the recommendation as well as a broader fortification strategy. Regardless of the approach, paediatricians are likely to play a vital role in reducing the incidence of this entirely preventable condition.

British Association of Perinatal Medicine and Neonatal Society

1154 THE IMPACT OF LESS INVASIVE SURFACTANT ADMINISTRATION ON THE NEED FOR MECHANICAL VENTILATION IN PRETERM INFANTS <31 WEEKS GESTATION

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Background Neonatal respiratory distress syndrome due to surfactant deficiency affects two thirds of preterm infants <33 weeks gestation and is associated with high morbidity and mortality. Traditional methods of surfactant administration, involve intubation and ventilation, which risks mechanical lung damage and the development of bronchopulmonary dysplasia. To reduce this risk, less invasive surfactant administration (LISA) methods have been developed, which utilise non-invasive ventilatory techniques.

The current indications for LISA on our unit include, infants ≥26 weeks gestation (<26 weeks at consultant discretion), with an FiO₂ requirement >0.3 but <0.6, who have regular spontaneous respiratory effort after receiving caffeine and who are on minimal inotropic support.

Objectives To establish how many inborn infants <31 weeks gestation received non-invasive ventilation, with or without LISA and avoided the need for intubation and mechanical ventilation within the first 72 hours of life.

Methods All infants born 22+⁰- 30+⁶ who received survival focused care and were admitted to NICU between 1st January 2019–31st March 2020 were included. Data was obtained using the badgernet system and included gestational age (GA), gender, birth weight, mode(s) of respiratory support within the first 72 hours and, where applicable, method of surfactant administration.

Results 131 inborn infants were identified with gestational ages ranging from 22+⁵- 30+⁵. All infants <24+⁰ (n=10), were intubated and received surfactant within the first two hours of life.

At 24+⁰- 24+⁶ (n=9), 66.7% were intubated and received surfactant within 72hours, 11.1% received LISA and 22.2% remained on non-invasive respiratory support.

At 25+⁰- 25+⁶ (n=7), 71.4% were intubated and received surfactant within 72hours, one of whom had initially received LISA. 28.6% remained on high flow therapy (HFT).

At 26+⁰- 26+⁶ (n=33), 30.3% were intubated and received surfactant as their first line therapy, 39.4% received LISA and 30.3% remained on HFT. LISA prevented intubation in 46% of its recipients.

At 27+⁰- 27+⁶ (n=22), 50% were intubated and received surfactant within the first 72hours, whilst the remaining 50% were successfully managed with LISA (13.6%) or HFT alone (36.4%).

At 28+⁰- 28+⁶ (n=19), 42.1% were intubated and received surfactant as their first line therapy, 31.6% received LISA and 26.3% remained on HFT. LISA prevented intubation in 66.7% of its recipients.

At 29+⁰- 29+⁶ (n=14), 14.3% were intubated and received surfactant, 50% received LISA (85.7% of whom avoided intubation) and 35.7% remained on HFT alone.

At 30+⁰- 30+⁶ (n=17), 29.4% received LISA (preventing intubation in 80% of recipients) and the remaining 70.6% were managed on HFT.

Conclusions The need to intubate and mechanically ventilate preterm infants can be effectively reduced by using LISA methods, provided recipients are carefully selected and the intervention is tailored to the infants individual requirements. Implementing LISA in the delivery suite may further reduce the need for intubation in more mature preterm infants. Further exploration of swaddling and alternative analgesia is also important to minimise failure rates associated with the current procedural sedation.

British Association of General Paediatrics

1155 INTRODUCING DEXMEDETOMIDINE SEDATION TO A DISTRICT GENERAL HOSPITAL

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Background Sedation may be needed to avoid motion artefact in children undergoing MRI scans. It is preferable to a general

anaesthetic which is twice as costly, involves additional risks and is often not feasible in a district general setting.

The NICE guidance for sedation for paediatric imaging recommends oral chloral hydrate for children <15kg and oral midazolam if >15kg, however reported success rates of midazolam are low.

Dexmedetomidine is a colourless and odourless selective α_2 -agonist that has been used to sedate children for a wide range of procedures. Published success rates for intranasal administration for paediatric MRI are 56–98%. Common side effects include transient bradycardia and hypotension, but these rarely require intervention (<0.1% all cases).

Objectives To assess the efficacy and safety of intranasal dexmedetomidine for the sedation of children for MRI scans in a district general hospital.

Methods We sequentially audited different approaches to sedation of children attending our paediatric day unit for elective MRI scans over a 2 year period. In the first 11 months the NICE guidance was followed (epoch 1), the following 9 months chloral hydrate used for all patients (epoch 2) and in the final 4 months intranasal dexmedetomidine used for children >15kg or where a child had failed chloral sedation previously (epoch 3).

Dosing was 50mg/kg (maximum 1g/dose) for chloral hydrate, 500microgram/kg (maximum 20mg/dose) for midazolam and 4 micrograms/kg (maximum 200micrograms/dose) for dexmedetomidine, or 2 microgram/kg if in combination with chloral hydrate. Scans were considered successful if the images were sufficient for a paediatric radiologist to provide a diagnostic opinion.

Results There were 77 scan attempts for 65 children. 75/77 (97%) scans were an MRI Head. Median age was 3.2 years overall, 2.6 years for chloral hydrate (range 3 months - 7.2 years), 5.1 years for midazolam (2.8–15.5 years) and 3.7 years for dexmedetomidine (1.5–13.7 years). Fifty-five children received 1 attempt, nine 2 and one 4.

Overall success rates per scan attempt were 29/47 (62%) for chloral hydrate, 4/12 (33%) for midazolam, and 12/17 (71%) for dexmedetomidine. Success rates were 52% (17/33) using NICE guidance, 71% (15/21) when only chloral hydrate was used and 82% (18/22) after introduction of dexmedetomidine (Fisher's exact test $p = 0.026$ epoch 1 vs epoch 3).

Of 6 children who failed sedation with chloral hydrate and had further attempts on another date, only the 3 who had dexmedetomidine were successful. 1 child was successfully sedated with a combination of chloral hydrate and dexmedetomidine after a previous failure with dexmedetomidine alone.

Dexmedetomidine was associated with reductions in HR and BP below age-specific normal range in 72% (8/11) and 20% (2/10) evaluable cases respectively. Median reduction in HR from baseline was 20% (range 0–39%). 18% (2/11) had HR >20% below normal range. Children with abnormal observations were clinically reviewed, but none required any interventions.

Conclusions Using dexmedetomidine instead of midazolam and where chloral hydrate has failed significantly improves sedation success compared to following the NICE guidance. The incidence of cardiovascular side effects from dexmedetomidine was similar to larger series and not clinically significant.

British Paediatric Allergy Immunity and Infection Group

1156

FEVER IN THE RETURNING PAEDIATRIC TRAVELLER: A RETROSPECTIVE REVIEW OF HOSPITAL ADMISSIONS OVER TWO YEARS WITHIN A CENTRAL BIRMINGHAM TRUST, UK

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Background With increasing international travel, there is greater recognition for good clinical assessment of the febrile returning paediatric traveller, with appropriate use of tests based on travel history and presenting symptoms. Fewer guidelines are available on appropriate investigations for travellers from South Asia.

Objectives Primary outcome was to analyse the clinical assessment and management of febrile paediatric admissions returning from abroad in the preceding 12 months. This included analysis of diagnostic investigations and their utility. We also aimed to consider the proportion of treatable diagnoses in relation to travel location.

Methods A retrospective observational study of paediatric admissions lasting over twelve hours duration in a central Birmingham NHS Trust was carried out, for 24 months from January 2018 to December 2019. Patients aged 16 and under, with a fever over 38 degrees on admission or history of fever at home, with travel history outside of the UK in the preceding 12 months were included.

Patients were identified from review of handover documentation. Clinical progression and outcome were outlined using medical records. Data were analysed on Microsoft Excel.

Results 97 paediatric patients fit the inclusion criteria; 95 had further details of admission available. Median age on admission was 4.8 (range 3 months to 16 years). 47/97(49%) were male.

51/97(53%) travelled to Asia (of which 82% travelled to South Asia), 22/97(22%) to Africa, 20/97(21%) to Europe and 4/97(4%) to North America. 69/97(71%) of all travel was to malaria endemic countries.

Median time to hospital presentation since travel was 15 days (mean, 45 days). Common presenting symptoms included vomiting (39/95,41%), diarrhoea (33/95,35%), cough (30/95,32%) and reduced oral intake (8/95,8%).

The highest rates of positive findings were via chest radiograph (43%) and parasite blood film (23%). 45/95(47%) of patients had at least one positive investigation which could be directly treated.

The most common diagnoses were non-specific viral illness (23/97,24%), gastroenteritis (21/97,22%) and lower respiratory tract infection (15/97,15%). Tuberculosis was suspected in 4 cases. Malaria was confirmed in 10/97(10%), 2 with *Plasmodium vivax* (travel to West Asia) and 7 with *Plasmodium falciparum* (travel to Africa).

Of travellers to South Asia (42/97,43%), 40% had at least one positive investigation. 50% of positive stool cultures and 25% of positive blood cultures in the full study population were from those returning from South Asia.