of treatment and annually thereafter. Our aim was to determine if patients taking Orkambi experienced a rise in their liver enzymes during treatment.

Methods This study was conducted at the University Hospital Limerick, Ireland Paediatric CF unit. All 39 homozygous F508del patients on Orkambi were included. Lab results were collected for the following variables for each patient: AST, ALT, ALP, GGT and bilirubin at set time intervals Pre-Orkambi, and three, six, nine and 12 months on treatment. The Pre-Orkambi levels were compared with the three month levels.

Results We determined that overall patients on Orkambi did not have a rise in liver enzymes. Unexpectedly, patients had a statistically significant decrease in their ALT (p-value 0.016), ALP (p-value 0.001), GGT (p-value 0.002) and Bilirubin (p-value 0.002). AST levels saw no significant change (p-value 0.76). Two patients had a rise in AST levels during Orkambi treatment greater than three times ULN, however, these levels then decreased with continued Orkambi use. None of our patients had any liver tests greater than eight times the ULN, or five times ULN during treatment, and none had ALT, ALP or Total Bilirubin levels greater than three times ULN during treatment. None of our patients had to stop taking Orkambi due to adverse events related to liver tests. Our findings are in contrast to those suggested by the original Orkambi trials data

Conclusion Our study demonstrated that patients taking Orkambi do not experience a rise in liver tests, in fact, unexpectedly, the values decrease.

GP275

PEDIATRIC SPRAY-SOL: A NEW NEBULIZATION DEVICE SPECIFIC FOR UPPER RESPIRATORY TRACT INFECTIONS

¹Antonio Moffa, ²Valentina Grimaldi*, ³Vittorio Rinaldi, ³Michele Antonio Lopez, ³Lorenzo Sabatino, ³Andrea Costantino, ¹Michele Cassano, ³Manuele Casale. ¹Department of Otolaryngology, University of Foggia, Foggia, Italy; ²General Practice Paediatrician, Public Health (Asl RM2), Rome, Italy; ³Unit of Otolaryngology, UOS ORL TI, Campus Bio-Medico University, Rome, Italy

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Background Upper respiratory tract infections (URTI) are very common in the pediatric population due to their 'physiologically' immature immune system; yet, around 90% are viral – only 10% of URTI are bacterial. Therefore, treatment should essentially be symptomatic to relieve the child's discomfort and symptoms. Topical, rather than system, treatment is preferable reducing systemic effects and increasing the topical efficacy. There are many different nasal devices used to treat URTI, but often they are not specifically targeted for this purpose.

Objective Our group developed a new nebulization device, called 'Pediatric spray-sol', target specificity, very speed, pocket-size and portable, mono-patient without sterilization problems with the ability to vary concentration and quantity of medication in delivery, to combine substances in a single treatment.

Materials and Methods The device can be used in combination with a common syringe (without needle), without need for electricity. The user operates the plunger of the syringe to push the liquid drug into the delivery device. Once inside, the substance is nebulized and, from there, delivered into the nose in aerosol form. The device includes a fluidodynamic path with an expansion chamber and an acceleration chamber

arranged in sequence, which allows for the optimum delivery of fluid.

Results The features of Spray- Sol include: the ability to nebulize high viscosity substances similarly an aerosol, nebulize particles of average diameter between 10 and 20 microns, the very low administration times (10 seconds to 5 cc of substance), the cost and the possibility of use for all the duration of the treatment, it is portable and doesn't need electricity. This nasal nebulizer provides a more extensive and intensive delivery of solution in the nasal cavities, especially the deeper and higher portions of nasal cavity. In particular, pediatric Spray-sol, seem to guarantee a homogeneous distribution of drug at the middle turbinate and ostiomeatal complex crucial region for the drainage and ventilation of the paranasal sinuses. Spray-Sol reaches more easily the nasopharynx subsite and it could be considered a useful device for adenoiditis and Eustachian tube dysfunction. Moreover, it can quickly and efficiently nebulize not only saline solutions but others substances like hyaluronic acid, ectoine and corticosteroids.

Conclusions Pediatric Spray-sol is a new nebulization device for URTI treatment: combining the comfort of a spray with the efficacy of an aerosol. Pediatric Spray-sol can be used to deliver any type of solution in the nose such as saline solutions, hyaluronic acid, ectoine and corticosteroids.

GP276

AUDIT OF NEWBORN SCREENING CORK UNIVERSITY HOSPITAL 2011–2019 – IMPACT OF GESTATIONAL AGE ON SWEAT TESTING

Aoife Gallagher*, Katherine Hooley, Sean Costello, Susanna Felsenstein, David Mullane, Muireann NíChróinín. Cork University Hospital, Cork, Ireland

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Background A previous national audit looking at sweat testing in all age groups in 2011 found Cork University Hospital (CUH) had a high number of tests with quantity not sufficient (QNS) result. Since then there has been new equipment and staff training. International laboratory audit criteria examine failure rates for under 6 months which has recently been <1% in CUH (acceptable<5%). However higher failure rates (0–40%) for sweat testing have been noted internationally in newborn screening programmes, a more difficult cohort to successfully sweat test.

Aims Sweat tests performed in CUH from 2011–2018 as part of newborn screening in relation to number of patients with positive (>60), negative (<30), equivocal and QNS results were reviewed. The gestational age at birth and at time of testing and birth weight were examined as potential variables.

Methods

Ethical approval obtained Newborn screening records for all patients from July 2011 to December 2018 reviewed. Sweat testing data obtained from laboratory. Data analysed using SPSS and Chi-Square test.

Results 102 infants referred to Cork for sweat testing as part of newborn screening. Patients diagnosed by meconium ileus (n=7), had sweat testing elsewhere (n=1) or had antenatal diagnosis (n=2) were not included (N= 10). On initial testing 30 patients had a QNS result (32.6%). 7 had same day repeat testing which was sufficient, the remaining having sweat testing at a later date. Ultimately there were 23 with positive tests, 67 with negative tests, 2 equivocal tests. Gestational age and birth weight of the 30 patients with initial QNS result

were compared to the 62 with successful testing. Infants were divided into two groups based on gestation, 38 weeks and below and 39 weeks and above. Results were dichotomised into sufficient and insufficient (QNS) results. The Chi square test indicated that there is a statistically significant association between gestational age and sufficient or insufficient result. ($p=0.004$)

Discussion It would be helpful to compare our data to the same cohort in other centres and national rate to see if this is an acceptable QNS rate and obtain further data regarding gestational age. Collection techniques and laboratory analysis have already been optimised with current equipment and staff. Consideration could be given to delay offering sweat test by one to two weeks to those born at 37 and 38 weeks gestation in infants who only have 1 mutation. This may reduce need for time consuming and stressful repeat testing.

GP277 EVALUATION OF A NOVEL DISPOSABLE OSCILLATING POSITIVE EXPIRATORY PRESSURE (OPEP) DEVICE IN A COHORT OF CHILDREN WITH CYSTIC FIBROSIS

^{1,2}J O'Sullivan Kevin*, ¹Valerie Power, ^{2,3}Deirdre McGrath, ²Colum Dunne, ¹Leonard O'Sullivan, ^{3,4}Barry Linnane. ¹School of Design, University of Limerick, Limerick, Ireland; ²Graduate Entry Medical School, University of Limerick, Limerick, Ireland; ³University Hospital Limerick, Limerick, Ireland; ⁴National Childrens Research Centre, Dublin, Ireland

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Objectives To evaluate use of a novel disposable Oscillating Positive Expiratory Pressure (OPEP) device (SoloPep) by children with CF.

Methods A convenience sample of 36 participants, all current OPEP device users, was recruited from a paediatric CF service. For one month, participants replaced their current OPEP devices (typically used daily for up to 6 months) with the SoloPep device (daily disposable), and followed their existing OPEP regimen. Lung function was assessed on the day that use of the new device was adopted and following completion of the test period using the EasyOne Air Spirometer (NDD Medzintech AG, Switzerland). Lung Clearance Index (LCI) was assessed via multiple-breath nitrogen washout (Exhalys D, Eco Medics, Switzerland). User experience of SoloPep was evaluated with a post-study questionnaire, rated on five-point Likert scales. All participants were trained at the first clinic visit to use the SoloPep device utilising a proprietary software program.

Results 31 participants completed the study: 13 females; median age 10 years, range 4–16 years. Lung function (mean $\pm$ SD; %FEV₁, baseline = 83.26 ± 19.63 , follow-up = 86.31 ± 20.95 ; %FVC, baseline = 92.65 ± 16.02 , follow-up = 94.32 ± 16.82 ; FEV₁: FVC, baseline = 0.79 ± 0.11 , follow-up = 0.80 ± 0.10) and LCI (mean $\pm$ SD; baseline = 10.05 ± 2.86 , follow-up = 9.66 ± 2.10) were unchanged post-intervention. Most participants felt that SoloPep was easy to use (72% Strongly Agree; 24% Agree; 4% Neutral), addressed issues they had with cleaning their current OPEP device (72% Strongly Agree; 16% Agree; 12% Neutral), and encouraged them to perform their OPEP therapy more regularly (52% Strongly Agree; 28% Agree; 16% Neutral, 4% Strongly Disagree). All participants agreed that they would like to use SoloPep as their usual OPEP device (76% Strongly Agree; 24% Agree). No adverse device-related events were reported during SoloPep use.

Conclusion SoloPep was developed as a daily disposable OPEP device to reduce the risk of infection due to poor device cleaning. It is a convenient, user-friendly alternative to currently available OPEP devices. Over the course of the study, lung function was maintained, no adverse events were reported, and positive user experiences of the device were reported. Therefore, SoloPep may be a useful adjunct to aid airway clearance in children with CF.

GP278 WARD LEVEL HIGH FLOW NASAL CANNULA OXYGEN FOR THE MANAGEMENT OF BRONCHIOLITIS: THE IMPACT ON HIGH DEPENDENCY UNIT BEDS (INTERIM RESULTS)

Natalie Bee*, Christopher Tee, Mairi Stark. Royal Hospital for Sick Children, Edinburgh, UK

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Background Many units across the UK and Europe still use HFNC₂ only within the critical care department. Prior to the introduction of ward level high flow nasal cannula oxygen (HFNC₂) ten percent of patients admitted with a diagnosis of bronchiolitis required high dependency (HDU) care in our tertiary centre. A review of winter 2016 data suggested that the introduction of ward HFNC₂ had the potential to reduce over a third of HDU admissions. The median length of stay in HDU was 7.82 days for bronchiolitis patients.

Aim To introduce ward level HFNC₂ for the management of bronchiolitis and audit the impact on critical care floor beds (HDU).

Methods

1. Produced an evidence-based guideline for HFNC₂ use at ward level in the management of bronchiolitis.
2. Set up a working group and instituted staff training.
3. Sought management approval leading to the funding of 2 machines for ward level use.
4. Implemented the protocol in September 2018.
5. Interim audit of the use and outcomes December 2018.

Results Twenty patients received ward HFNC₂. Only one patient had a significant background comorbidity which was neuromuscular. Table 1 shows the demographics, management and outcomes. Three patients required HDU care for continuous positive airway pressure. No patients required intensive care.

Overall therefore were 60 days of ward HFNC₂ use.

Abstract GP278 Table 1

Demographics	N=20
Age range (decimal age)	0.03 – 1.4
Median decimal age (years)	0.78
Sex: Male	7
Female	13
Preterm	1
Management	
Oral feeds	1
NG continuous feeds	4
I.V fluids	15
HFNC₂	
Mean no. of days of HFNC ₂	3
Deterioration requiring HDU (n=)	3
Deterioration requiring PICU (n=)	0
Mean length hospital stay (days)	5.9
Median length hospital stay (days)	5