

reported as a useful and safe technique in young children with CF, but it is not yet widely used.

#### Hypothesis

As part of a quality improvement initiative, we hypothesised that SI would reduce the need for BAL in school-aged CF children with deteriorating lung function and no significant bacterial growth on CS.

**Methods** After CS and bronchodilator, 7% hypertonic saline was nebulised via an ultrasonic Ultraneb (DeVilbiss Healthcare) for 15 min. Spirometry was performed pre, post and at 5 min intervals throughout. Sputum was collected at 5 min intervals, and at the end of the procedure physiotherapy was performed to collect more sputum. If a child was unable to expectorate then a CS or oropharyngeal (OP) suction was performed.

**Results** 39 children (41% male), median age 11 years (range 5–16 years), median FEV<sub>1</sub> 85% (range 39–112%) performed SI from June 2102 to July 2014. Significant bronchoconstriction occurred in 11%. 2 adverse events occurred (vomiting and dizziness). The procedure took a mean of 90 min including equipment set up and cleaning.

34/39 (87%) expectorated a sputum sample of which 15 (38.5%) had a positive bacterial culture; only 3 of these patients (20%) grew the same organism on the preceding CS. Five patients avoided planned BAL due to a positive SI result and 2 avoided an admission for intravenous antibiotics.

**Conclusion** SI is well tolerated in the majority of school-aged children with CF. It has a higher rate of positive bacterial culture than same-day CS and, in this cohort, avoided the need for bronchoscopy in a significant proportion. It is a time-consuming procedure, but based on these data, we consider that establishing SI as a clinical procedure will be a priority for our service.

## Integrated knowledge in practice

### P107 KNOWLEDGE OF NON INVASIVE VENTILATION IN A DISTRICT GENERAL HOSPITAL – A CAUSE FOR CONCERN?

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10.1136/thoraxjnl-2014-206260.248

**Introduction** Non Invasive Ventilation (NIV) is being used more widely in acute areas by medical staff with varied training and experience in initiation and ongoing management of ventilatory failure.

**Aims** To investigate doctors' knowledge of NIV in an emergency department (ED) and general medical wards, specifically indications for use, appropriate set up and ongoing care.

**Methods** An anonymous online and written questionnaire was distributed to all doctors working in general medicine and in the ED at a UK district general hospital in Spring 2014. Participants were asked to identify appropriate indications for NIV and then led through a scenario of managing a patient with COPD and decompensated ventilatory failure.

**Results** 40/116 (34%) of doctors responded across all grades. On a 6-point scale, self-identified confidence in managing NIV improves with seniority (5.2 (ST3+) vs 3.3 (FY1-ST2)) and past job experience in ICU (4.1 vs 3.6). Doctors were unclear about indications for NIV outside ICU/HDU. Whilst the majority

(95%) correctly identified COPD exacerbations as an indicator, doctors at all grades would also use NIV for: asthma (10%), significant hypoxia (10%) and pneumothorax (3%). A fifth (18%) would start NIV without initial medical therapy. Only 55% (22/40) could identify appropriate initial ventilatory pressures (initial IPAP range 4–16, initial EPAP range 4–16). Suggesting a value for back up rate was more problematic with 43% (17/40) unable to provide any value and 9/23 (39%) suggesting an inappropriate value (range 8–18). Only 55% (22/40) could correctly alter settings while 23% (9/40) of doctors altered both IPAP and EPAP by equal amounts. 50% (4/8) ED/medical registrars could not alter settings correctly

**Conclusions** Knowledge of appropriate use of NIV is sub optimal across all grades working in the ED and general medicine in our institution, and probably reflects the increasing use of a specialist intervention in the hands of non-specialists. There are a number of doctors whose use of NIV could compromise patient safety. Urgent education across all grades is needed alongside review of how NIV is delivered in the DGH setting.

### P108 ACUTE NIV PRACTICES AT A DISTRICT GENERAL HOSPITAL AND THE IMPACT OF REGULAR ELECTRONIC FEEDBACK ON PATIENT OUTCOME

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10.1136/thoraxjnl-2014-206260.249

**Background** Non-invasive ventilation (NIV) has become the standard of care for management of acute type 2 respiratory failure. There is evidence that junior doctors receive inadequate training and confidence in the use of NIV is low. National audits have shown consistent shortcomings in NIV management.

**Aims** To assess initiation of acute NIV in a District General Hospital setting, to provide prompt structured feedback to doctors initiating NIV and to assess whether feedback leads to improvement.

**Methods** A total of 72 acute NIV initiations were prospectively assessed between January and June 2014. Data from patient records was collected using a structured pro-forma to assess nine parameters (described below). A feedback email with total score out of nine along with brief written feedback was sent to all doctors initiating NIV.

**Results** Performance was reported for each of the nine criteria; documented indication for NIV (94%); documented NIV start time (90%); BTS recommended NIV pressures achieved (61%); ABG immediately prior to therapy (93%); ABG performed at 1–2 h (75%) and at 4–6 h (79%); documented ceiling of treatment (70%) and discussion with patient/relatives (67%); improvement in pH at 6 h (58%). Use of correct pressures led to an improvement in pH in 68% compared to 43% when inadequate pressures were used ( $p < 0.05$ ). pH at 6 h improved in 81% when all initial 8 parameters were met compared to 0% with a score of 4 or less ( $p < 0.01$ ). There was a trend towards increased survival with higher scores.

Scores steadily improved over the first 3 months however fell at the beginning of April, coinciding with the rotation of junior doctors, rising again towards the end of the study period.

**Conclusion** Better adherence with BTS guidelines led to improvements in patient outcomes. Structured feedback led to improvement in NIV initiation scores.