Introduction Congenital lung agenesis is a rare abnormality which has been reported to have an estimated incidence of 1 in 15,000 pregnancies and to carry a poor prognosis, especially when associated with congenital heart anomalies. (1) However, precise incidence data has previously been unavailable and clinical management has improved in recent years with an unknown impact on outcomes.

Methods We used the North of England register of congenital anomalies (NorCAS) cross-referenced with clinical data from our regional paediatric respiratory centre to calculate the first known accurate incidence estimate for this condition. Detailed clinical and outcome data were then collected with informed consent from the families of affected infants.

Results The incidence of lung agenesis was 0.12 per 100,000 live births (95% confidence interval 0.03–0.31). Four cases were identified with a median age at follow-up of 5 years. Lung agenesis was associated with complex congenital heart disease (complete atrioventricular septal defect with left atrial isomerism) in one case, and with aortic coarctation and atrial septal defect in another. Both these patients had their heart defects successfully repaired. The third patient had a normal heart but musculoskeletal problems, while lung agenesis was the only anomaly in the fourth patient. All four patients are well and not on home oxygen.

Conclusions We reviewed the course of the four patients with lung agenesis born in the region between 2004 and 2013, and report that medium term outcomes have been good, even when associated with congenital heart disease and other anomalies. This information will provide a useful starting point when counselling parents whose unborn baby has an antenatal diagnosis of lung agenesis. We aim to follow-up these patients to report long-term outcomes as these remain unknown and there is concern about the potential for the development of late onset pulmonary hypertension.¹

REFERENCE

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From oxygen to the ITU

P187 POTENTIAL IMPACT OF NON-ARTERIAL BLOOD GAS SAMPLING ON CLINICAL PRACTICE

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Introduction Arterial blood gas (ABG) analysis is commonly used to monitor patients with acute respiratory problems but can be painful and associated with potentially serious side-effects. Recently there has been renewed interest in non-arterial forms of blood gas analysis with a suggestion that such techniques could replace >60% of ABGs.¹ It is however difficult to quantify the impact that non-ABG sampling could have as there is little published data on the clinical burden that ABGs represent. We were interested in establishing how many ABGs are routinely done in a real world setting.

Methods We retrospectively analysed acute admissions (all cause) to a ward based level 2 Respiratory Emergency Care Unit (RECU) at a University Teaching Hospital over a 6 month period. Prospectively we analysed visual analogue pain scores (VAS) and complications including attempt rates.

Results Over a 6month period (Apr-Oct) 57 of 111 patients admitted to the RECU had complete datasets. A total of 432 ABGs were obtained from this cohort giving an average of 7.6 ABGs (range 2 – 22) per patient per admission and on average patients had 2.3 ABGs each day whilst on RECU.

Overall the mean number of attempts per ABG of the prospectively collected cohort (n = 100) was 1.6 (range 1 – 8; 44% physician obtained). Taking this into account a patient could therefore expect to be stabbed 3.7 times every day or 11 times in total during their admission through the RECU. The most commonly documented complication amongst our patients was pain but average pain scores were relatively low in keeping with other published data (median VAS = 3, IQR 5); no serious complications were reported.

Conclusions Our data suggests that patients requiring admission to a level 2 respiratory unit experience a high burden of ABG testing during their stay. Using published literature on the potential impact of Non-ABG sampling our data suggests that >500 ABGs could be avoided each year on our acute respiratory unit alone.

REFERENCE

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P188 NASAL HIGH FLOW (NHF) – IS IT APPROPRIATELY PRESCRIBED? A RETROSPECTIVE CASE REVIEW OF 93 ADULT PATIENTS REQUIRING NASAL HIGH FLOW OXYGEN WITHIN A DISTRICT GENERAL HOSPITAL

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Background Nasal high flow (NHF) delivers warmed humidified oxygen up to 65L/min and is commonly used in intensive care units (ICU). In a non-critical care settings it can provide a bridge to ICU for hypoxic patients, and symptom palliation for those unsuitable for escalation.

Evidence to support NHF use in a non-critical care setting is limited. We aimed to review patient selection and clinical outcomes for individuals commenced on NHF over two winter periods, in order to highlight prognostic indicators and develop a clinical guideline.

Method We performed a retrospective review of 93 cases managed with NHF September-December in 2014 and 2015 in a medium sized DGH. Patients were included regardless of diagnosis and treatment escalation plan. Data was collected on patient demographics, diagnosis, management and clinical outcome. Results described as %(n).

Results 93 patients (mean age 71.2 yrs, SD 14.8). Presenting complaint: Pneumonia 57.0% (53), Aspiration pneumonia 4.3% (4), Pulmonary embolism 4.3% (4), Pulmonary oedema 3.2% (3), Interstitial Lung Disease 3.2% (3), other diagnoses 28.0% (26). Clinical indication: Hypoxia 64.5% (60), hypoxia and work of breathing 14.0% (13), work of breathing alone 7.5% (7) and palliation 14.0% (13).

42 patients (45%) were assessed by ICU, of which 21 patients were deemed appropriate [mean age 65 yrs (40–84)]. 62% (13) were intubated. 81% (17) survived to discharge; 5.9% (1) required LTOT. No significant correlation was present between flow rates and mortality (p = 0.7).

72 patients (77.4%) were managed in non-critical care settings [mean age 72.7 yrs (28–99)]. 48.6% (35) survived to discharge, 14.3% (5) required LTOT and 5.7% (2) died within 30 days of discharge. Flow rates ranged 20–65 L/min. In non-ICU patients, survival was negatively correlated with increasing flow rates ($r = -0.86$). Patients requiring ≥ 60 L/min had an 86% mortality rate ($p = 0.0001$).

Conclusion Mortality rates were higher in patients managed on NHF in a non-critical care setting. A negative correlation was present between flow rates and survival outside of ICU. This may be explained by an older patient cohort, associated comorbidities and premorbid performance status. However this information could help guide clinical decision making in acutely unwell patients with limited escalation options.

P189 OXYGEN USE IS BECOMING MORE CONSERVATIVE ON INTENSIVE CARE UNITS IN THE UK

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Background There is controversy about the optimal level of oxygenation for patients in intensive care units (ICU) and several recent publications have raised the possibility of harm from hyperoxaemia amongst ICU patients.¹ Most recent ICU publications have reported that hyperoxaemia is common. The aim of this project was to audit blood gas data at two hospitals to determine if there is evidence of changing practice in recent years.

Methods We audited all available ICU blood gas datasets for Hospital A for 2005 ($n = 16,734$), 2010 ($n = 12,714$) and 2015 ($n = 17,292$) and data from Hospital B from 2012–2013 ($n = 11,006$) and for 2015 ($n = 22,223$).

Results At Hospital A, the percent of ICU blood gas samples with hyperoxaemia ($\text{SaO}_2 > 98\%$) fell from 57.4% in 2005 to 45.1% in 2010 and 29.0% in 2015. Mean SaO_2 fell from 97% in 2005 to 96% in 2015. The mean PaO_2 also fell from 15.1 kPa in 2005 to 13.5 in 2015 (The reference range for PaO_2 is 12.0 to 15.0 kPa). Samples from hospital B did not span such a wide time range but they demonstrated a similar fall in the proportion of hyperoxaemic samples from 42.7% in 2012–2013 to 29.7% in 2015 which was very similar to the data for Hospital A in 2010 and 2015 (45.1% and 29.0%).

Conclusions There is evidence from two hospitals that the use of oxygen in Intensive Care Units has become more conservative in recent years, possibly as a result of recent publications which have identified poor outcomes in association with hyperoxaemia. A wider survey will be undertaken to determine if this trend is taking place in Intensive Care Units throughout the UK.

Abstract P189 Table 1

Oxygen saturation	2005	2010	2015	2015
SaO_2 ranges	Percent of Hospital A ICU blood gas samples	Percent of Hospital A ICU blood gas samples	Percent of Hospital A ICU blood gas samples	Percent of Hospital B ICU blood gas samples
<70%	0.7%	0.7%	1.4%	2.9%
70–89.9%	1.7%	3.7%	3.7%	6.1%
90–94%	4.0%	7.8%	10.2%	12.8%
94.1–98%	36.3%	42.7%	55.6%	48.5%
>98%	57.4%	45.1%	29.0%	29.7%

REFERENCE

1 Helmerhorst et al. *Crit Care Med* 2015;43:1508–19.

P190 CHARACTERISTICS AND OUTCOME OF PATIENTS WITH ACTIVE TUBERCULOSIS REQUIRING INTENSIVE CARE ADMISSION, 2010–2015

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Introduction Severe tuberculosis (TB) infection requiring admission to the intensive care unit (ICU) has been reported to be associated with a poor prognosis; however, no data on this cohort of patients from the UK is available. We sought to characterise and report the outcome of this patient group, looking to identify prognostic markers of a poor outcome.

Methods All patients admitted to the ICU at our London tertiary referral centre between 01/01/10 and 31/12/15 and coded as having TB were identified and cross-referenced against the London TB register.

Results 29 patients were identified which represents 4% (29/790) of all TB notified at our centre in the study period. Median age was 41 years (22–86); 72% were male. 69% had pulmonary TB; 24% were HIV-infected, with a median CD4 count on admission of 134/uL (17–277). 14% were AFB smear-positive; 79% had culture-positive TB and 86% grew fully-sensitive organisms. The most frequent indications for ICU admission were hypoxic respiratory failure (38%), haemodynamic compromise (24%) and hypercapnic respiratory failure (21%). Median A-a gradient was 12.9 kPa, median $\text{PaO}_2/\text{FiO}_2$ ratio was 29.9 kPa. 72% required mechanical ventilation (median ventilation days 8.4). Two patients received extracorporeal membrane oxygenation therapy for severe respiratory failure. Median APACHE II score was 16 and median SOFA score was 4. Median length of stay in ICU was 7 days and in hospital was 24. At 30 days, 35% remained in-patients (of which 14% remained in ICU), 59% had been discharged home and 21% had died.

Table 1 summarises the differences between survivors and those who died.

Abstract P190 Table 1 Patient characteristics comparing median values in the patients who survived to 30 days, against those who died. Values are displayed as median (range).

	Survived (n = 23)	Died (n = 6)
Age (years)	41 (22–79)	58 (37–86)
ICU Length of stay (days)	7 (2–54)	11 (3–64)
Hospital Length of stay (days)	22 (5–228)	44 (8–66)
CRP (mg/L)	71 (0–303)	104 (58–232)
White cell count ($\times 10^9$)	9.1 (3.2–29.9)	11 (3.3–21.3)
Haemoglobin (g/L)	94 (71–156)	88 (75–111)
Albumin (g/L)	27 (15–44)	21 (17–27)
pH (on admission)	7.38 (7.04–7.47)	7.30 (7.14–7.59)
pO ₂ (kPa)	10.53 (6.9–40.0)	9.12 (7.0–10.6)
pCO ₂ (kPa)	5.92 (3.3–14.6)	9.03 (4.2–12.1)
P/f ratio	32 (13.2–60.3)	25.2 (12.2–30.3)
Ventilator days	2 (0–47)	6 (2–56)
Days on cardiovascular support	0 (0–13)	3 (0–56)
Days on renal replacement therapy	0 (0–19)	5.5 (0–15)