different mix of patients in the CF registry than the US insurance based health system despite the US CF foundation's attempts to reduce barriers to care. This study compared registry and routine deaths in UK and USA.

**Methods** UK and US routine deaths for ICD-10 E84 are provided in 5 year age bands and the age of death was taken as the midpoint age in the band. Medians were calculated with STATA.

**Results** US routine data are not yet published for 2007 onwards. The Abstract P236 table 1 shows total deaths and median age at death derived from routine and registry data for USA and UK.

### Abstract P236 Table 1

| Year | UK Total deaths routine | UK median age at death registry/ routine | UK registry Total deaths (n) (%) missing | US total deaths routine | US median age at death registry/ routine | US registry total deaths (n) (%) missing |
|---|---|---|---|---|---|---|
| 2009 | 147 | 27/27 | 141 (6) (4%) | NA | 26.1/NA | 440 (NA) (NA) |
| 2008 | 122 | 27/27 | 100 (22) (18%) | NA | 26.3/NA | 420 (NA) (NA) |
| 2007 | 133 | 24/27 | 106 (27) (20%) | NA | 25.9/NA | 394 (NA) (NA) |
| 2006 | 112 | NA/27 | NA | 438 | 25.2/27 | 362 (76) (21%) |
| 2005 | 108 | NA/27 | NA | 414 | NA/27 | NA |
| 2004 | 137 | 26/27 | 123 (14) (10%) | 461 | 24.2/27 | 358 (103) (29%) |
| 2003 | 117 | 24/24 | 136 (33) (24%) | 447 | 25.4/27 | 370 (77) (21%) |
| 2002 | 118 | NA/24 | NA | 485 | 25.2/27 | 426 (59) (14%) |

CF deaths in UK and US 2002 to 2009.

**Discussion** Both the US and UK have around 20% of CF deaths occurring outside centres though in 2009 in the UK this fell to 4%. In 3 out of the 5 years that allow comparison the median age at death was higher in UK registry data compared to the USA. Contrary to expectation the median age at death derived from routine data are higher than the age of death from registry data in all years where comparison is possible. Interestingly, in the US routine data the distribution were different to the UK with many more very old (over 70) patients. The increased age at death in routine data may in part reflect the imprecision related to the routine data only providing age at death in 5 year bands. The apparent higher proportion of very elderly in the US is intriguing and invites further study.

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P237 | **DOES DESATURATION ON EXERCISE PREDICT NOCTURNAL HYPOXIA IN CHILDREN WITH CYSTIC FIBROSIS?**

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**Introduction** Exercise induced arterial hypoxia (EIAH) is well documented in cystic fibrosis (CF); though its relationship with nocturnal hypoxia remains unclear. In adult CF, hypoxia occurs more frequently during sleep than exercise,[1][2] but this has not been investigated in children.

**Aim** To identify whether EIAH is a reliable predictor of nocturnal hypoxia in CF children.

**Methods** Retrospective case note review of 34 children with CF. All performed the modified shuttle test,[3] overnight pulse oximetry and spirometry in the second week of an elective admission for intravenous antibiotics. EIAH was defined as drop in $SpO_2$ ≥4% from baseline.[4] There is no agreed definition of nocturnal hypoxia, we assessed numerous overnight variables, mean and lowest $SpO_2$ and % time with $SpO_2$ <92% in sleep. Data were analysed using SPSS software (SPSS).

**Results** 34 subjects were assessed, median age 12 (range 7–16) years, and $FEV_1$ 72 (25–103) % predicted. Nine demonstrated EIAH and

five had nocturnal desaturation ($SpO_2$ <92% >10% sleep time). All children with $SpO_2$ <92% for >10% of sleep also had EIAH, this was significant (p=0.0086). The relationship between nocturnal hypoxia and lowest exercise $SpO_2$ (p=0.0076) was also significant. However, 6 of those with EIAH were not hypoxic overnight. The sensitivity of EIAH detecting sleep hypoxia was 75% and specificity 80%. Positive predictive value (PPV) was 33% and negative predictive value 96%.

**Conclusion** The PPV of EIAH for detecting nocturnal hypoxia is poor, but the definition of EIAH must be questioned. $SpO_2$ varying from 90% to 87% does not meet EIAH criteria, yet a fall from 97% to 93% does. We must also note that although the relationship between nocturnal hypoxia and EIAH appears significant the number of subjects in this group is extremely small. We conclude EIAH is not a reliable predictor of nocturnal desaturation and advocate a sleep study to confidently detect sleep hypoxia.

### Abstract P237 Table 1

| Sleep Exercise | $SpO_2$ < 92% for <10% of sleep n=32 | $SpO_2$ <92% for >10% of sleep n=3 | p Value | Drop in $SpO_2$ <4% n=11 | Drop in $SpO_2$ ≥4% n=23 | p Value |
|---|---|---|---|---|---|---|
| Baseline $SpO_2$ | 97 (87–99) | 94 (89–97) | 0.1449 | 97 (94–99) | 97 (87–99) | 0.5397 |
| % Change in $SpO_2$ | 1 (−5–7) | 10 (4–13) | 0.0128 | 1 (−6–3) | 2 (−11–18) | 0.294 |
| Number with EIAH | 6 (16%) | 3 (100%) | 0.0086 | 1 (9%) | 6 (26%) | 0.3844 |
| Lowest $SpO_2$ | 95 (88–100) | 84 (79–90) | 0.0076 | 95 (93–99) | 95 (79–100) | 0.204 |

### REFERENCES
1. **Bradley,** et al. Chest 1999.
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P238 | **PRESCRIPTION ISSUE DATA AS A MEASURE OF ADHERENCE WITH NEBULISED THERAPY IN AN ADULT CYSTIC FIBROSIS CENTRE**

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**Introduction and Objectives** Patients with cystic fibrosis are often prescribed complex time-consuming medication regimens. We know from studies in chronic diseases that most patients will be at best only partially adherent with their medication. We studied adherence with nebulised therapy in our adult CF clinic, by measuring the actual quantity of medication prescribed as recorded in General Practitioner and hospital computer prescribing records. The results were compared with the CF centre staff's predictions of adherence on an individual patient basis.

**Methods** We requested prescription issue data for 26 patients on nebulised dornase α, colistin and tobramycin both from the patient's general practitioners and from the hospital pharmacy. We compared the actual quantity of medication prescribed to each patient to the expected number of doses that they should have received during a 12-month period and calculated a percentage adherence based on these figures. Based on previous work in our difficult asthma clinic we assigned obtaining =80% of doses as being adherent; =50% but <80% as partially adherent and <50% as non-adherent with the medication.