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### Abstract Details

**PRESENTATION TYPE:** Poster

**CURRENT CATEGORY:** PSYCHOSOCIAL/BEHAVIORAL

**KEYWORDS:** adherence, quality improvement, care improvement.

**AWARDS:**

### Abstract

**TITLE:** THE IMPORTANCE OF DATA COMPLETENESS IN DETERMINING CENTRE-LEVEL NEBULISER ADHERENCE RATES

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### **ABSTRACT BODY:**

#### **Abstract Body: Background**

Identifying high performing CF centres can drive learning and inform quality improvement, but outcomes such as FEV1 or exacerbations are insensitive to change at a centre level. Randomised controlled trials with adequate sample size have shown that maintenance inhaled therapies will result in various important outcomes such as improved FEV1 or decreased exacerbations. This allows adherence rates to inhaled therapy (a process measure) to be used as a quality indicator to identify highly performing centres.

Objective monitoring of adherence to inhaled therapy using chipped nebulisers suggests that median adherence in adults is only 36% (Daniels T et al, Chest 2011; 140: 425-32). However, these data are based on nebulisers brought to clinic and it is important to understand adherence rates in the nebulisers that are never brought to clinic.

### **Aim**

To explore the effects of missing data on the nebuliser adherence rates of an adult CF centre

### **Methods**

This is a retrospective analysis of adherence data measured with the I-neb nebuliser for both 2013 and 2014 in the Sheffield Adult CF Centre. Adherence is calculated as 'normative adherence' (Hoo ZH et al, Patient Prefer Adherence 2016; 10: 1-14) which takes into account a patient's characteristics when defining the minimum required treatment regime. People just on non-chipped devices for inhaled therapy, on ivacaftor or with previous lung transplantation were excluded. Every person had at least 3 months' worth of adherence data.

Two potential causes of missing data were considered:

- (1) I-neb that were difficult to obtain for download (defined as people with data download <3 months for a particular year, whose I-neb was only downloaded in a subsequent year)
- (2) people not using any forms of inhaled therapy who should have been according to their clinical characteristics (based on the definitions in Hoo ZH et al, Patient Prefer Adherence 2016; 10: 1-14)

### **Results**

89/166 (53.6%) of adults in 2013 and 97/170 (57.1%) of adults in 2014 were using I-nebs. For both 2013 and 2014, only measuring adherence from I-neb that were easily obtainable over-estimated the overall centre adherence. Adherence rates fell further if people not on any inhaled therapy but their clinical characteristics suggested they should be on inhaled therapy were included in the overall estimate of centre adherence.

### **Conclusions**

Nebuliser data were not missing at random. Adherence levels fell after including difficult to obtain nebuliser in the

analysis and accounting for the population that are not on any inhaled therapy. A quality indicator in CF based on nebuliser adherence needs to consider data completeness in comparing the adherence rates of different centres.

| Effects of missing data on adherence rates |  |   |  |   |   |
|--|--|---|--|---|---|
| .  | Difficult to obtain nebuliser (no data $\geq 3$ months in a particular year) | Easily obtainable I-neb (at least one download with $\geq 3$ months of data in a particular year) | Mann-Whitney p-value comparing easy vs difficult to obtain I-neb | Nebuliser adherence rates for everyone on I-neb | Nebuliser adherence rates by considering those not on nebuliser to have adherence = 0 |
| Data for 2013; median % adherence (IQR)    | 8.3 (3.0 - 17.4)<br>N = 15   | 39.3 (17.1 - 65.4)<br>N = 74  | < 0.001  | 32.8 (14.5 - 58.1)<br>N = 89                    | 18.0 (2.1 - 50.1)<br>N = 113  |
| Data for 2014; median % adherence (IQR)    | 9.8 (3.2 - 14.6)<br>N = 13   | 44.3 (22.2 - 75.2)<br>N = 84  | < 0.001  | 39.6 (14.6 - 65.4)<br>N = 97                    | 33.6 (5.7 - 61.1)<br>N = 116  |

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