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### Abstract Details

**PRESENTATION TYPE:** Poster

**CURRENT CATEGORY:** PSYCHOSOCIAL/BEHAVIORAL

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

**AWARDS:**

### Abstract

**TITLE:** REAL WORLD EVIDENCE OF SUSTAINED IMPROVEMENT IN OBJECTIVE ADHERENCE TO MAINTENANCE INHALED THERAPIES IN AN ADULT CYSTIC FIBROSIS CENTRE

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### **ABSTRACT BODY:**

**Abstract Body:** Background

High adherence to maintenance inhaled therapies is associated with better outcomes but adherence levels are generally low and there is currently no systematic adherence intervention for people with CF.

The Sheffield Adult CF centre has run pilot projects to improve nebuliser adherence since 2013, leading to a 2014 NIHR programme grant to develop a systematic adherence intervention. We hypothesised that the pilot projects would have improved the adherence levels among adults receiving care at our centre.

### Aims

To determine the overall change in objective nebuliser adherence and health outcomes in our centre from 2013-2016

### Methods

This is a retrospective analysis of routinely collected clinical data. Adults on ivacaftor or with previous lung transplantation were excluded.

Demographic data, spirometry, BMI, intravenous antibiotics days and prescription details were obtained by reviewing patient notes and electronic patient records. Adherence data were captured with I-neb nebuliser, calculated as normative adherence[1] and clustered according to the methods we have described.[2] Data from 2013-2016 were compared using Friedman (continuous data) or Cochran's Q (binary data) test.

### Results

Despite the increasing age of the cohort, FEV<sub>1</sub> and IV use remained relatively stable. There was a consistent reduction in the rate of FEV<sub>1</sub> decline from 2013-2014 (median -2%, IQR -6 to -1%) to 2015-2016 (median 0%, IQR -3 to 2%), p=0.012. BMI had also increased consistently.

The proportion of I-neb users remained stable. Median normative adherence to maintenance inhaled therapies increased from 32.8% in 2013 to 45.6% in 2016, p=0.004.

Adherence clusters consider both magnitude and variation in adherence. The proportion of adults with adherence cluster 3 ('moderate') or 4 ('high') increased from 22/89 (24.7%) in 2013 to 39/102 (38.2%) in 2016, p=0.010. Those with adherence cluster 3 or 4 have less FEV<sub>1</sub> decline (median 0.0% vs -1.0% for 2015-2016) and less IV use (median 14 days vs 26 days for 2015).

### Conclusions

There were sustained improvements in objective adherence and health outcomes although a systematic adherence intervention is still being iterated. Adherence remains a challenging issue but these results should engender hope within the CF community that medication adherence can be improved.

Adults with 'moderate' or 'high' adherence have better health outcomes compared to those with lower adherence.

## References

1. Hoo ZH, et al. Patient Prefer Adherence 2016;10:887-900
2. Hoo ZH, et al. Patient Prefer Adherence 2017;11:631-42

## TABLE:

*Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.*

| .   | 2013<br>(N = 166)     | 2014<br>(N = 170)     | 2015<br>(N = 185)     | 2016<br>(N = 186)     | P-values       |
|---|-----------------------|-----------------------|-----------------------|-----------------------|----------------|
| People on I-<br>neb, (%)                                | 89 (53.6%)            | 97 (57.1%)            | 104 (56.2%)           | 102 (54.8%)           | 0.547 $\omega$ |
| % I-neb<br>normative<br>adherence,<br>median<br>(IQR)   | 32.8 (14.5 -<br>58.1) | 39.6 (14.6 -<br>65.4) | 42.9 (18.6 -<br>73.8) | 49.6 (21.9 -<br>68.9) | 0.004 $\Phi$   |
| I-neb<br>adherence<br>Cluster 3 or<br>Cluster 4,<br>(%) | 22 (24.7%)            | 31 (32.0%)            | 32 (30.8%)            | 39 (38.2%)            | 0.010 $\omega$ |
| Age in years,<br>median<br>(IQR)                        | 25 (19 - 31)          | 26 (20 - 32)          | 27 (20 - 34)          | 27 (21 - 34)          | < 0.001 $\Phi$ |
| % predicted<br>best FEV1,<br>median<br>(IQR)            | 79 (56 - 95)          | 79 (56 - 93)          | 81 (63 - 93)          | 83 (61 - 93)          | < 0.001 $\Phi$ |
| Change in<br>annual %<br>best FEV1,<br>median<br>(IQR)  | .                     | -2.0 (-6.0 to<br>1.2) | -1.0 (-3.3 to<br>2.0) | 0.0 (-3.0 to<br>2.0)  | 0.012 $\Phi$   |
| BMI, median<br>(IQR)                                    | 22.3 (19.7 -<br>24.6) | 22.7 (20.0 -<br>25.0) | 23.0 (20.3 -<br>26.0) | 23.2 (20.4 -<br>26.0) | < 0.001 $\Phi$ |
| Annual<br>intravenous<br>antibiotic<br>days, median     | 14 (0 - 35)           | 14 (0 - 28)           | 14 (0 - 35)           | 14 (0 - 40)           | 0.001 $\Phi$   |

|  |  |
|--|--|
| (IQR)  |  |
| $\Phi$ = Friedman test;<br>$\omega$ = Cochran's Q test |  |

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