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Abstract

TITLE: UNDERSTANDING FEV_1 FOR THE PURPOSE OF CF REGISTRY COMPARISONS: ARE UK ANNUAL REVIEW FEV_1 ONLY COLLECTED WHEN SUBJECTS ARE WELL?

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ABSTRACT BODY:

Abstract Body: Background

Comparisons of health outcomes between countries can potentially identify variation in care but are dependent on data quality.

The recent US-UK FEV_1 comparison found superior FEV_1 in the US, especially among those aged 6-25 years.[1] Encounter-based FEV_1 were collected in the US whereas once yearly FEV_1 were collected in the UK during annual reviews. To mirror the UK data, one clinically stable FEV_1 reading was selected from each US study subject.[1] This is based on the assumption that annual reviews in the UK are only done when subjects are well. If this assumption does not hold, results of FEV_1 comparisons will be biased in favour of registries with encounter-based FEV_1.

Aims

1. Determine the discrepancy between annual review vs matched clinically stable FEV_1 using prospective 2016 Sheffield encounter-based data
2. Determine if the differences observed in Sheffield also apply to the wider UK data using the 2014 UK CF registry data

Methods

Clinicians' opinion of health status and Fuchs' criteria[2] were recorded during every encounter involving a clinician review in Sheffield during 2016. Annual reviews were performed in accordance with usual practice. Every annual review FEV_1 was matched to another FEV_1 performed during a period of clinical stability that was closest to the annual review. Mean paired difference and paired t-test p-value were calculated.

Differences between annual review and best annual FEV_1 for Sheffield and the UK registry data were similarly analysed.

Results - Sheffield data

Annual review FEV_1 were significantly lower than matched clinically stable FEV_1. Among 63 adults who were reviewed by a clinician during their annual review, 13 (20.6%) were deemed clinically unstable. Annual review FEV_1 were also significantly lower than best annual FEV_1, with larger discrepancy among those deemed clinically unstable during annual review.

Results - UK registry data

Discrepancy between annual review and best annual FEV_1 were similar to Sheffield.

Conclusions

The Sheffield data suggests that discrepancy between annual review and best annual FEV_1 is a surrogate for the proportion of annual reviews performed during periods of clinical stability – a smaller discrepancy indicates a higher proportion of annual review performed during periods of stability and vice versa. The discrepancy between annual review and best annual FEV_1 in Sheffield is similar to the UK registry, hence it is likely that the proportion of annual reviews performed during periods of stability around the UK was similar to Sheffield.

Annual review FEV_1 underestimated lung health of study subjects in comparison to FEV_1 captured during periods of clinical stability and could potentially explain the superior FEV_1 observed in the US.

References

1. Goss CH, et al. Thorax. 2015;70:229-36
2. Fuchs HJ, et al. N Engl J Med 1994;331:637-42

TABLE:

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

.	Sheffield data: Annual review FEV1 vs matched clinically stable FEV1 (n = 173)	Sheffield data, subset analysis: Clinically stable annual review FEV1 vs best annual FEV1 φ (n = 50)	Sheffield data, subset analysis: Clinically unstable annual review FEV1 vs best annual FEV1 φ (n = 13)	Sheffield data: Annual review FEV1 vs best annual FEV1 (n = 174)	UK CF registry data: Annual review FEV1 vs best annual FEV1 (n = 2995)
Paired mean difference in %FEV1 (95% CI)	−2.9 (−3.8 to −1.9)	−8.0 (−11.2 to −4.9)	−2.5 (−3.9 to −1.2)	−6.1 (−7.1 to −5.1)	−5.6 (−5.9 to −5.4)
Paired t-test p-value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
φ Health status of adults during 111 annual reviews was unknown because annual reviews in Sheffield do not always involve a formal clinical review					

(No Image Selected)