Relationship between self -report adherence and clinical variation

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Objectives: In 2007 an electronic clinical record (ECR) was implemented within a Regional Adult CF unit (420 patients) coding for all variables of CF, captured at each contact. Longitudinal patterns of clinical variation have emerged that suggest a relationship between variation in lung function between treatments and overall adherence. Our aim was to 1) determine the accuracy of self-report adherence 2) explore the relationship between clinical variation and adherence.

Methods: Patients completed a self-report of adherence (CFQ-R) and consented to pharmacy script data collection (previous 6 months). Coefficient of variation for FEV_1 was calculated from all clinical contacts within the previous year. Age, gender, microbial status, disease severity, medication, lung function and anthropometric measures were collected.

Results: 250 patients [age 29.7(±9.2) years, 58.6% (M), baseline BMI22.5 kg/m^2 (±3.8), FEV_1 61.3% (±25.1), FVC 79.4% (±23.1)] completed the study

Selected variables of adherence		Correlations with self-report adherence						Descriptive stats	
Adherence Self-Report (using CFQ-R) (%)		Pharmacy collection	Sig	FEV_1 Coeff Variation	Sig	CRP coeff variation	Sig	Pharmacy discrepancy (%)	Sig
Total adherence	77.7(±17.5)	0.61	p<0.001	-0.16	P<0.001	0.05	p=0.20	14.3	p<0.001
Aerosol to thin mucus	73.0(±37.8)	0.51	p<0.001	-0.11	p=0.06	0.15	p=0.02	19.2	p<0.001
Aerosol to open airway	82.3(±31.9)	0.34	P<0.005	0.001	p=0.47	0.16	p=0.025	4.5	p=0.24
Inhaler	77.4(±35.4)	0.51	p<0.001	-0.07	p=0.21	0.12	p=0.07	16.2	p<0.001
PERT	91.4(±21.3)	0.45	p<0.001	-0.21	P=0.001	-0.12	p=0.04	23.6	p<0.001
Vitamins	88.2(±27.2)	0.46	p<0.001	-0.03	P=0.35	0.15	p=0.01	24.7	p<0.001
Oral nutrition supplements	64.1(±39.8)	0.51	p<0.001	-0.20	P=0.01	-0.06	p=0.28	18.1	p<0.001
Oral antibiotics	86.4(±26.6)	0.32	p<0.001	-0.15	P=0.01	-0.08	p=0.11	19.5	p<0.001
Nebulised antibiotics	67.4(±9.1)	0.55	p<0.001	-0.19	P=0.01	-0.04	p=0.31	2.1	P=0.43

Conclusion: Self-report consistently exceeds medication collection. Longitudinal indices of lung function inversely relate to reported adherence, enabling investigation of FEV_1 coefficient variation as a predictor of adherence in CF

Abstract 2 Objective predictors of self-report of adherence in adults with cystic fibrosis

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Objective: Self-report of adherence is inaccurate and has been shown to be 14% above pharmacy script collection in our adult clinic population. Using electronic clinical record (ECR) data our aim was to evaluate whether objective measures of adherence exist and their ability to predict adherence in an adult population with CF.

Methods: Adherence measures had been gained from a previous study. Patients were subsequently classified into one of 3 categories: low (<60%), moderate (60-80%), good (>80%) according to a mean of their score from the CFQ-R adherence score and confirmation against prescribed medications. Coefficient of variation for FEV_1 was calculated from all clinical contacts within the previous year. Age, gender, microbial status, disease severity, medication, respiratory and anthropometric measures were collected at baseline. Ordinal regression was used to determine the contribution of objective variables to adherence.

Results: 249 patients [age 29.7(±9.2) yrs, 58.6% (M)] completed the study. Regression analysis revealed that FEV_1 coefficient of variation [OR = 0.95; CI: 0.92-0.98, p=0.006], number of types of medication [OR = 1.18; CI: 1.11-1.26, p<0.001], and age [OR = 1.03; CI: 1.01 to 1.06, p=0.026] together explained 19% of the variance in the model, classified as having good fit. Banding status, gender, microbial status and genotype did not predict adherence.

Conclusion: Although adherence is complex in aetiology, we have shown that 3 objective measures can predict almost 20% of the model. The odds of being in a higher adherence category increase for every 1 year of age , for every 1% reduction in FEV_1 coefficient variation and each increase in medication.

The impact of disease severity and clinical variation on self-reported adherence

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Background: In a previous study we have shown that variation coefficient of FEV_1 is a predictor of reported adherence in CF. Although disease severity was shown not to predict adherence the aim of this study was to firstly determine the level of adherence according to disease severity and secondly the relationship between disease severity and clinical variation.

Method: Patients were classified as Band1/1A [6%]; 2 [21.6%]; 2A [41.8%] ;3 [19.6%]; 4[9.1%]; 5 [2.8%] according to national standard criteria and their reported adherence noted from a previous study using CFQ-R self-report and pharmacy collection data. Coefficient of variation (calculated from the variation of highest and lowest consecutive points for FEV1, weight and CRP, for the previous year) and days iv therapy were noted and compared across disease severity (ANOVA)

Results: Significant differences were observed across disease banding for all clinical variation markers (FEV_1, Weight, CRP). Adherence was greatest for Band 1/1A, decreases to Band 4 and improved in late stage disease.

Measure	Band 1/1A	Band 2	Band 2A	Band 3	Band 4	Band 5	ANOVA
Adherence (self-report)	93.5% (±5.1)	74.7% (±13.5)	81%(±15.5)	67.4% (±17.4)	58.5% (±27.7)	66.8% (±20.8)	F (5, 242) = 2.33, p = .004.
Coefficient of variation FEV_1	6.7% (±3.5)	13.2% (±7.5)	9.0% (±5.3)	13.1% (±5.6)	17.5% (±4.6)	18.2% (±11.7)	F (2, 27) = 7.58, p <0.001
Coefficient of variation weight	2.3% (±1.9)	2.8% (±1.6)	2.3% (±1.4)	3.2% (±1.2)	5.4% (±6.8)	5.6% (±6.9)	F (5, 243) = 3.35, p = .006
Coefficient of variation CRP	37.5% (±43.7)	31.8% (±43.6)	93.5% (±5.1)	47.8% (±46.8)	69.6% (±46.6)	47.5% (±38.5)	F (5, 243) = 4.51, p = .001.
Days iv therapy	24.5% (±28.9)	10.9% (±20.4)	21.1% (±25.5)	36.0% (±30.4)	79.5% (±37.3)	98.0% (±126.3)	F (5, 243) = 20.8, p <0.001

Conclusion: Coefficient of variation for clinical markers of disease show clear graphical and significant trends across bandings of disease severity. Patients within Band 4 show poorest adherence, and greatest variation in lung function and CRP, suggesting targeting of this group