**SUPPLEMENTARY INFORMATION**

**TITLE:** Rescue therapy within the UK Cystic Fibrosis Registry: An exploration of predictors of intravenous antibiotic use amongst adults with CF

**Authors’ full names:** Zhe Hui Hoo1,2, Martin James Wildman2,1, Rachael Curley2,1, Stephen John Walters1, Michael Joseph Campbell1

**Authors’ affiliation(s):**

1 School of Health and Related Research (ScHARR), University of Sheffield, Sheffield, UK

2 Sheffield Adult CF Centre, Northern General Hospital, Sheffield, UK

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**Figure S4.6** *Tree-based diagram for 2014 to summarise current year IV days according to the different clinical subgroups using four categories of prior-year IV days (no IV, 1-17 days, 18-42 days, ≥ 43 days)*

**Appendix S1: The relationships between age, BMI, % FEV1 & prior-year IV days with current year IV days for 2013 and 2014**

 Scatter plot of IV days in 2013 vs age Scatter plot of IV days in 2013 vs BMI

 Current year IV days showed no clear relationship with age Current year IV days was negatively correlated with BMI

 Scatter plot of IV days in 2013 vs % FEV1 Scatter plot of IV days in 2013 vs IV days in 2012



 Current year IV days was negatively correlated with % FEV1 Current year IV days was positively correlated with prior-year IV days

 Scatter plot of IV days in 2014 vs age Scatter plot of IV days in 2014 vs BMI



 Current year IV days showed no clear relationship with age Current year IV days was negatively correlated with BMI

 Scatter plot of IV days in 2014 vs % FEV1 Scatter plot of IV days in 2014 vs IV days in 2013

 Current year IV days was negatively correlated with % FEV1 Current year IV days was positively correlated with prior-year IV days

\*The Local Polynomial Regression (LOESS) curve is a non-parametric method for fitting smooth curves to empirical data, to depict relationships between variables. For reference, see:

Cleveland WS, Devlin SJ. Locally weighted regression: an approach to regression analysis by local fitting. *J Am Stat Assoc* 1988; 83: 596–610.

**Appendix S2: A contingency table showing the distribution of covariates according to current year IV days**

|  |  |  |
| --- | --- | --- |
| Demographics and clinical characteristics (covariates): | 2013 | 2014 |
| Current year IV days ≤ 14 N = 2542 | Current year IV days > 14N = 1722 | Current year IV days ≤ 14 N = 2772 | Current year IV days > 14N = 1872 |
| Age in years, median (IQR)Female, %Pancreatic insufficient, %CF related diabetes, %*P. aeruginosa* status Chronic *P. aeruginosa*, % Intermittent *P. aeruginosa*, %BMI in kg/m2, median (IQR)% predicted FEV1, median (IQR)Prior-year IV days, median (IQR) | 28 (22 – 37)1043 (41.0%)1889 (75.7%)562 (22.1%)1065 (41.9%)364 (14.3%)22.8 (20.7 – 25.3)75.0 (56.7 – 90.6)0 (0 – 14) | 27 (22 – 33)891 (51.7%)1558 (91.9%)793 (46.1%)1211 (70.3%)212 (12.3%)21.1 (19.1 – 23.3)49.1 (34.7 – 66.8)37 (15 – 60) | 28 (22 – 37)1123 (40.5%)2045 (74.7%)654 (23.6%)1049 (37.8%)455 (16.4%)22.8 (20.7 – 25.3)76.3 (58.3 – 91.8)0 (0 – 14) | 28 (23 – 34)973 (52.0%)1711 (91.9%)871 (46.5%)1291 (69.0%)234 (12.5%)21.2 (19.1 – 23.4)49.7 (35.1 – 66.8)35 (14 – 59) |

**Appendix S3: Sensitivity analyses using number of IV courses (instead of IV days) as the dependent variable in a logistic regression model and using ordinal regression models to explore different cut-offs for IV courses & IV days**

*Sensitivity analysis 1: using number of IV courses in a stepwise logistic regression model*

Using number of IV courses in the current year (≤1 course vs ≥2 courses) as the dependent variable in a stepwise binary logistic regression model as described in the ‘Methods’, prior-year IV use was the strongest predictor for current year IV use followed by FEV1 for both 2013 and 2014. The final model is summarised in Table S3.1. These results show that prior-year IV use and FEV1 were the most robust predictors for current year IV use. The results were not influenced by considering cumulative IV exposure (as IV days) or the number of IV courses as the outcome.

Table S3.1: Summary of the output from the final binary logistic regression model which include all nine covariates listed

|  |  |
| --- | --- |
| **2013** (3843 study subjects included in the analysis) | **2014** (4040 study subjects included in the analysis) |
| Covariates: | Wald statistic | P-value | Adjusted odds ratio(95% CI) | Covariates: | Wald statistic | P-value | Adjusted odds ratio(95% CI) |
| **Prior-year IV days** **% predicted FEV1**CF centreAge in yearsChronic *P. aeruginosa* FemaleCF related diabetesPancreatic insufficient | **437.6****136.4**107.420.223.421.810.18.4 | **< 0.001****< 0.001**< 0.001< 0.001< 0.001< 0.0010.0010.004 | 1.05 (1.05 – 1.06)0.97 (0.97 – 0.98)0.98 (0.97 – 0.99)1.61 (1.33 – 1.95)1.54 (1.28 – 1.84)1.37 (1.13 – 1.67)1.57 (1.16 – 2.13) | **Prior-year IV days** **% predicted FEV1**Chronic *P. aeruginosa* CF centreFemalePancreatic insufficientBMI in kg/m2Intermittent *P. aeruginosa*CF related diabetes | **441.3****132.7**34.989.628.912.710.45.24.4 | **< 0.001****< 0.001**< 0.001< 0.001< 0.001< 0.0010.0010.0230.035 | 1.05 (1.05 – 1.06)0.98 (0.97 – 0.98)1.90 (1.54 – 2.35)1.62 (1.36 – 1.93)1.69 (1.27 – 2.26)0.96 (0.93 – 0.98)1.39 (1.05 – 1.85)1.23 (1.01 – 1.48) |

*Sensitivity analysis 2: using four categories of IV courses in an ordinal regression model*

Using number of IV courses in the current year (no IV, 1 course, 2-3 courses, ≥4 courses) as the dependent variable in an ordinal logistic regression model with the same co-variates as described in the ‘Methods’, prior-year IV use remained the strongest predictor for current year IV use followed by FEV1 for both 2013 and 2014. The final model is summarised in Table S3.2. These show the results are robust regardless of the cut-off points used.

Table S3.2: Summary of the output from the ordinal logistic regression model which include all nine covariates listed

|  |  |
| --- | --- |
| **2013** (3843 study subjects included in the analysis) | **2014** (4040 study subjects included in the analysis) |
| Covariates: | Wald statistic | P-value | Adjusted odds ratio(95% CI) | Covariates: | Wald statistic | P-value | Adjusted odds ratio(95% CI) |
| **Prior-year IV days** **% predicted FEV1**Chronic *P. aeruginosa*FemaleAge in yearsCF related diabetesPancreatic insufficientIntermittent *P. aeruginosa*BMI in kg/m2Centre 23 (vs Centre 28)\*Centre 15 (vs Centre 28)\*Centre 2 (vs Centre 28)\*Centre 11 (vs Centre 28)\*Centre 1 (vs Centre 28)\* | **735.2****240.7**49.633.825.813.48.87.44.35.44.94.74.13.9 | **< 0.001****< 0.001**< 0.001< 0.001< 0.001< 0.0010.0030.0070.0390.0200.0260.0310.0430.049 | 1.05 (1.05 – 1.06)0.97 (0.97 – 0.98)1.79 (1.52 – 2.11)1.49 (1.30 – 1.71)0.98 (0.97 – 0.99)1.32 (1.14 – 1.53)1.39 (1.12 – 1.72)1.36 (1.09 – 1.71)0.98 (0.97 – 0.99)2.92 (1.18 – 7.24)2.74 (1.13 – 6.67)2.94 (1.11 – 7.81)0.28 (0.08 – 0.96)2.68 (1.00 – 7.16) | **Prior-year IV days** **% predicted FEV1**Chronic *P. aeruginosa*FemalePancreatic insufficientIntermittent *P. aeruginosa*Age in yearsBMI in kg/m2CF related diabetesCentre 6 (vs Centre 28)\*Centre 20 (vs Centre 28)\*Centre 9 (vs Centre 28)\*Centre 5 (vs Centre 28)\* | **719.1****230.2**80.858.622.216.112.411.83.65.34.74.54.0 | **< 0.001****< 0.001**< 0.001< 0.001< 0.001< 0.001< 0.0010.0010.0570.0210.0300.0330.045 | 1.05 (1.05 – 1.06)0.97 (0.97 – 0.98)2.05 (1.75 – 2.40)1.67 (1.46 – 1.90)1.66 (1.34 – 2.04)1.53 (1.24 – 1.88)0.99 (0.98 – 0.99)0.97 (0.95 – 0.99)1.15 (1.00 – 1.33)0.40 (0.18 – 0.87)0.41 (0.17 – 0.91)0.40 (0.18 – 0.93)0.41 (0.47 – 0.98) |

\* Unlike a logistic regression model, the ordinal regression model is unable to determine the overall effect of CF centres on IV use. Therefore, 27 centres were compared against centre 28. Only centres with IV use that are significantly different from Centre 28 are shown in table C2.

*Sensitivity analysis 3: using four categories of IV days in an ordinal regression model*

Using current year IV days (no IV, 1-17 days, 18-42 days, ≥43 days) as the dependent variable in an ordinal logistic regression model with the same co-variates as described in the ‘Methods’ also yielded similar results. The final model is summarised in Table S3.3. These show the results with IV days are robust regardless of the cut-off points used.

Table S3.3: Summary of the output from the ordinal logistic regression model which include all nine covariates listed

|  |  |
| --- | --- |
| **2013** (3843 study subjects included in the analysis) | **2014** (4040 study subjects included in the analysis) |
| Covariates: | Wald statistic | P-value | Adjusted odds ratio(95% CI) | Covariates: | Wald statistic | P-value | Adjusted odds ratio(95% CI) |
| **Prior-year IV days** **% predicted FEV1**Chronic *P. aeruginosa*FemaleAge in yearsCF related diabetesPancreatic insufficientIntermittent *P. aeruginosa*BMI in kg/m2Centre 23 (vs Centre 28)\*Centre 11 (vs Centre 28)\* | **784.9****228.8**51.227.621.714.37.76.54.44.74.5 | **< 0.001****< 0.001**< 0.001< 0.001< 0.001< 0.0010.0060.0110.0360.0310.034 | 1.05 (1.05 – 1.06)0.97 (0.97 – 0.98)1.82 (1.54 – 2.14)1.44 (1.26 – 1.65)0.98 (0.98 – 0.99)1.34 (1.15 – 1.56)1.36 (1.10 – 1.69)1.34 (1.07 – 1.68)0.98 (0.98 – 0.99)2.73 (1.10 – 6.80)0.26 (0.08 – 0.90) | **Prior-year IV days** **% predicted FEV1**Chronic *P. aeruginosa*FemalePancreatic insufficientIntermittent *P. aeruginosa*BMI in kg/m2Age in yearsCF related diabetes | **780.5****224.9**70.340.123.213.89.56.72.9 | **< 0.001****< 0.001**< 0.001< 0.001< 0.001< 0.0010.0020.0090.087 | 1.05 (1.05 – 1.06)0.97 (0.97 – 0.98)1.96 (1.68 – 2.30)1.53 (1.34 – 1.75)1.68 (1.36 – 2.08)1.49 (1.21 – 1.83)0.97 (0.95 – 0.99)0.99 (0.98 – 1.00)1.14 (0.98 – 1.32) |

\* Unlike a logistic regression model, the ordinal regression model is unable to determine the overall effect of CF centres on IV use. Therefore, 27 centres were compared against centre 28. Only centres with IV use that are significantly different from Centre 28 are shown in table C3. In 2014, none of other adult CF centres differed significantly from Centre 28 in terms of IV days.

**Appendix S4: Sensitivity analyses using number of IV courses (instead of IV days) and different cut-offs to generate the clinical subgroups**

Figure S4.1: Tree-based diagram for 2013 to summarise current year IV days according to the different clinical subgroups using two categories of prior-year IV courses (≤ 1 course vs ≥ 2 courses)

**Adults with CF in 2013**

*n = 4269*

Median IV days in 2013 = 14 (IQR 0 – 35 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

Jonckheere-Terpstra p-value for these three subgroups <0.001

Mann-Whitney p-value for these two groups <0.001

**FEV1 < 40%**

*n = 490*

Median IV days in 2013

= 62

 (IQR

36 – 98 days)

**FEV1 40-69.9%**

*n = 634*

Median IV days in 2013

= 40

 (IQR

18 – 58 days)

**FEV1 ≥ 70%**

*n = 280*

Median IV days in 2013

= 28

(IQR

14 – 42 days)

**FEV1 < 40%**

*n = 263*

Median IV days in 2013

= 14

 (IQR

0 – 30 days)

**FEV1 40-69.9%**

*n = 856*

Median IV days in 2013

= 5

 (IQR

0 – 15 days)

**FEV1 ≥ 70%**

*n = 1385*

Median IV days in 2013

= 0

(IQR

0 – 9 days)

**Prior-year (i.e. 2012) ≥ 2 IV courses**

*n = 1477*

Median IV days in 2013 = 42 (IQR 23 – 70 days)

**Prior-year (i.e. 2012) ≤ 1 IV course**

*n = 2594*

Median IV days in 2013 = 0 (IQR 0 – 14 days)

Figure S4.2: Tree-based diagram for 2013 to summarise current year IV days according to the different clinical subgroups using four categories of prior-year IV courses (no IV, 1 course, 2-3 courses, ≥ 4 courses)

**Adults with CF in 2013**

*n = 4264*

Median IV days in 2013 = 14 (IQR 0 – 35 days)

Jonckheere-Terpstra

p-value for these four groups <0.001

**Prior-year (i.e. 2012) ≥4 IV courses** *n = 618*

Median IV days in 2013 = 67 (IQR 42 – 98 days)

**Prior-year (i.e. 2012) 2-3 IV courses** *n = 859*

Median IV days in 2013 = 28 (IQR 14 – 48 days)

**Prior-year (i.e. 2012) 1 IV course** *n = 806*

Median IV days in 2013 = 14 (IQR 0 – 27 days)

**Prior-year (i.e. 2012) no IV**

*n = 1788*

Median IV days in 2013 = 0

(IQR 0 – 8 days)

**FEV1**

**< 40%**

*n = 275*

Median IV days in 2013

= 80

 (IQR

56 – 118 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 64*

Median IV days in 2013

= 34

 (IQR

14 – 61 days)

**FEV1 40-69.9%**

*n = 238*

Median IV days in 2013

= 56

 (IQR

40 – 83 days)

**FEV1 40-69.9%**

*n = 396*

Median IV days in 2013

= 28

 (IQR

14 – 43 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 216*

Median IV days in 2013

= 28

 (IQR

12 – 40 days)

**FEV1**

**< 40%**

*n = 215*

Median IV days in 2013

= 42

 (IQR

25 – 63 days)

**FEV1 40-69.9%**

*n = 339*

Median IV days in 2013

= 14

 (IQR

0 – 28 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 324*

Median IV days in 2013

= 11

 (IQR

0 – 17 days)

**FEV1**

**< 40%**

*n = 120*

Median IV days in 2013

= 15

 (IQR

10 – 45 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1 40-69.9%**

*n = 517*

Median IV days in 2013

= 0

 (IQR

0 – 14 days)

**FEV1**

**< 40%**

*n = 143*

Median IV days in 2013

= 4

 (IQR

0 – 27 days)

**FEV1**

**≥ 70%**

*n = 1061*

Median IV days in 2013

= 0

 (IQR

0 – 0 days)

Figure S4.3: Tree-based diagram for 2013 to summarise current year IV days according to the different clinical subgroups using four categories of prior-year IV days (no IV, 1-17 days, 18-42 days, ≥ 43 days)

**Adults with CF in 2013**

*n = 4264*

Median IV days in 2013 = 14 (IQR 0 – 35 days)

Jonckheere-Terpstra

p-value for these four groups <0.001

**Prior-year (i.e. 2012) ≥43 IV days** *n = 743*

Median IV days in 2013 = 60 (IQR 38 – 93 days)

**Prior-year (i.e. 2012) 18-42 IV days** *n = 791*

Median IV days in 2013 = 28 (IQR 14 – 44 days)

**Prior-year (i.e. 2012) 1-17 IV days** *n = 749*

Median IV days in 2013 = 14 (IQR 0 – 24 days)

**Prior-year (i.e. 2012) no IV**

*n = 1788*

Median IV days in 2013 = 0

(IQR 0 – 8 days)

**FEV1**

**< 40%**

*n = 317*

Median IV days in 2013

= 77

 (IQR

51 – 115 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 82*

Median IV days in 2013

= 30

 (IQR

14 – 56 days)

**FEV1 40-69.9%**

*n = 298*

Median IV days in 2013

= 55

 (IQR

35 – 79 days)

**FEV1 40-69.9%**

*n = 369*

Median IV days in 2013

= 28

 (IQR

14 – 42 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 204*

Median IV days in 2013

= 28

 (IQR

13 – 41 days)

**FEV1**

**< 40%**

*n = 190*

Median IV days in 2013

= 42

 (IQR

21 – 60 days)

**FEV1 40-69.9%**

*n = 306*

Median IV days in 2013

= 14

 (IQR

0 – 28 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 318*

Median IV days in 2013

= 11

 (IQR

0 – 16 days)

**FEV1**

**< 40%**

*n = 103*

Median IV days in 2013

= 14

 (IQR

10 – 35 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1 40-69.9%**

*n = 517*

Median IV days in 2013

= 0

 (IQR

0 – 14 days)

**FEV1**

**< 40%**

*n = 143*

Median IV days in 2013

= 4

 (IQR

0 – 27 days)

**FEV1**

**≥ 70%**

*n = 1061*

Median IV days in 2013

= 0

 (IQR

0 – 0 days)

Figure S4.4: Tree-based diagram for 2014 to summarise current year IV days according to the different clinical subgroups using two categories of prior-year IV courses (≤ 1 course vs ≥ 2 courses)

**Adults with CF in 2014**

*n = 4644*

Median IV days in 2014 = 14 (IQR 0 – 34 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

Jonckheere-Terpstra p-value for these three subgroups <0.001

Mann-Whitney p-value for these two groups <0.001

**FEV1 < 40%**

*n = 494*

Median IV days in 2014

= 56

 (IQR

30 – 91 days)

**FEV1 40-69.9%**

*n = 630*

Median IV days in 2014

= 40

 (IQR

20 – 60 days)

**FEV1 ≥ 70%**

*n = 298*

Median IV days in 2014

= 28

(IQR

14 – 43 days)

**FEV1 < 40%**

*n = 270*

Median IV days in 2014

= 14

 (IQR

0 – 37 days)

**FEV1 40-69.9%**

*n = 911*

Median IV days in 2014

= 8

 (IQR

0 – 17 days)

**FEV1 ≥ 70%**

*n = 1485*

Median IV days in 2014

= 0

(IQR

0 – 9 days)

**Prior-year (i.e. 2013) ≥ 2 IV courses**

*n = 1501*

Median IV days in 2014 = 42 (IQR 21 – 69 days)

**Prior-year (i.e. 2013) ≤ 1 IV course**

*n = 2760*

Median IV days in 2014 = 0 (IQR 0 – 14 days)

Figure S4.5: Tree-based diagram for 2014 to summarise current year IV days according to the different clinical subgroups using four categories of prior-year IV courses (no IV, 1 course, 2-3 courses, ≥ 4 courses)

**Adults with CF in 2014**

*n = 4644*

Median IV days in 2014 = 14 (IQR 0 – 34 days)

Jonckheere-Terpstra

p-value for these four groups <0.001

**Prior-year (i.e. 2013) ≥4 IV courses** *n = 588*

Median IV days in 2014 = 66 (IQR 42 – 98 days)

**Prior-year (i.e. 2013) 2-3 IV courses** *n = 913*

Median IV days in 2014 = 28 (IQR 14 – 49 days)

**Prior-year (i.e. 2013) 1 IV course** *n = 902*

Median IV days in 2014 = 14 (IQR 0 – 28 days)

**Prior-year (i.e. 2013) no IV**

*n = 1858*

Median IV days in 2014 = 0

(IQR 0 – 8 days)

**FEV1**

**< 40%**

*n = 263*

Median IV days in 2014

= 73

 (IQR

51 – 112 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 59*

Median IV days in 2014

= 43

 (IQR

28 – 58 days)

**FEV1 40-69.9%**

*n = 217*

Median IV days in 2014

= 56

 (IQR

37 – 75 days)

**FEV1 40-69.9%**

*n = 413*

Median IV days in 2014

= 28

 (IQR

14 – 49 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 239*

Median IV days in 2014

= 21

 (IQR

11 – 41 days)

**FEV1**

**< 40%**

*n = 231*

Median IV days in 2014

= 37

 (IQR

20 – 61 days)

**FEV1 40-69.9%**

*n = 387*

Median IV days in 2014

= 14

 (IQR

0 – 28 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 349*

Median IV days in 2014

= 10

 (IQR

0 – 15 days)

**FEV1**

**< 40%**

*n = 137*

Median IV days in 2014

= 26

 (IQR

14 – 42 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1 40-69.9%**

*n = 524*

Median IV days in 2014

= 0

 (IQR

0 – 14 days)

**FEV1**

**< 40%**

*n = 133*

Median IV days in 2014

= 11

 (IQR

0 – 28 days)

**FEV1**

**≥ 70%**

*n = 1136*

Median IV days in 2014

= 0

 (IQR

0 – 0 days)

Figure S4.6: Tree-based diagram for 2014 to summarise current year IV days according to the different clinical subgroups using four categories of prior-year IV days (no IV, 1-17 days, 18-42 days, ≥ 43 days)

**Adults with CF in 2014**

*n = 4644*

Median IV days in 2014 = 14 (IQR 0 – 34 days)

Jonckheere-Terpstra

p-value for these four groups <0.001

**Prior-year (i.e. 2013) ≥43 IV days** *n = 770*

Median IV days in 2014 = 60 (IQR 40 – 92 days)

**Prior-year (i.e. 2013) 18-42 IV days** *n = 791*

Median IV days in 2014 = 28 (IQR 14 – 42 days)

**Prior-year (i.e. 2013) 1-17 IV days** *n = 842*

Median IV days in 2014 = 14 (IQR 0 – 28 days)

**Prior-year (i.e. 2013) no IV**

*n = 1858*

Median IV days in 2014 = 0

(IQR 0 – 8 days)

**FEV1**

**< 40%**

*n = 325*

Median IV days in 2014

= 70

 (IQR

47 – 107 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 85*

Median IV days in 2014

= 43

 (IQR

28 – 61 days)

**FEV1 40-69.9%**

*n = 302*

Median IV days in 2014

= 52

 (IQR

29 – 72 days)

**FEV1 40-69.9%**

*n = 359*

Median IV days in 2014

= 28

 (IQR

14 – 42 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 230*

Median IV days in 2014

= 16

 (IQR

8 – 35 days)

**FEV1**

**< 40%**

*n = 182*

Median IV days in 2014

= 33

 (IQR

21 – 56 days)

**FEV1 40-69.9%**

*n = 356*

Median IV days in 2014

= 14

 (IQR

0 – 28 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1**

**≥ 70%**

*n = 332*

Median IV days in 2014

= 10

 (IQR

0 – 15 days)

**FEV1**

**< 40%**

*n = 124*

Median IV days in 2014

= 24

 (IQR

9 – 42 days)

Jonckheere-Terpstra p-value for these three subgroups <0.001

**FEV1 40-69.9%**

*n = 524*

Median IV days in 2014

= 0

 (IQR

0 – 14 days)

**FEV1**

**< 40%**

*n = 133*

Median IV days in 2014

= 11

 (IQR

0 – 28 days)

**FEV1**

**≥ 70%**

*n = 1136*

Median IV days in 2014

= 0

 (IQR

0 – 0 days)