

Online supplementary data

Study Title:

Multidimensional severity assessment in bronchiectasis - An analysis of 7 European cohorts.

Material contained in this document:

- Outline of the Bronchiectasis Severity Index (BSI) and FACED scores
- Tables S1-4: Calibration of the BSI and FACED scores in high and low risk groups
- Table S5(a) and (b): Mortality meta-analysis data with and without the cohort of Ellis et al, ERJ 2016
- Figure S1: Quality of life in the Royal Brompton cohort of Ellis et al, ERJ 2016.

Clinical risk scores

1. Bronchiectasis Severity Index

<u>Age</u>	<u>Points</u>	<u>Exacerbation frequency</u>	<u>Points</u>
<50	0	3 or more per year	2
50-69	2	<3 per year	0
70-79	4		
80+	6		
<u>BMI</u>	<u>Points</u>	<u>MRC dyspnoea score</u>	<u>Points</u>
<18.5	2	1-3	0
>18.5	0	4	2
		5	3
<u>FEV₁% pred.</u>	<u>Points</u>	<u>Colonisation status</u>	<u>Points</u>
>80%	0	No	0
50-80%	1	Colonised	
30-49%	2	1	
<30%	3	<i>P. aeruginosa</i>	3
<u>Hospital adm.</u>	<u>Points</u>	<u>Radiology</u>	<u>Points</u>
Yes	5	3 or more lobes or cystic changes	1
No	0	<3 lobes involved	0

Classification:
 Mild = 0-4 points
 Moderate = 5-8 point
 Severe \geq 9 points

FACED score

- F – FEV1% predicted (cut-off point 50%; maximum value [MV]: 2 points);
- A – Age (cut-off: 70 years; MV: 2 points)
- C – Chronic colonisation with *Pseudomonas aeruginosa* (dichotomic; MV: 1 point)
- E - radiological Extension (E, number of lobes affected; cut-off: 2 lobes; MV: 1 point)
- D - Dyspnoea (cut-off point: grade II on the MRC scale; MV: 1 point)

Classification

Mild = 0-2 points

Moderate = 3-4 points

Severe = 5-7 points

Calibration analysis

BSI - low risk cohort

Cohort	Event rate	Control rate	Odds ratio
Athens, Greece	0%	2.6%	0.46 [0.03, 8.58]
Dundee, Scotland	0.7%	2.6%	0.28 [0.03, 2.39]
Galway, Ireland	7.3%	2.6%	2.95 [0.94, 9.24]
Leuven, Belgium	3.9%	2.6%	1.52 [0.29, 8.06]
Monza, Italy	0%	2.6%	0.25 [0.01, 4.60]
Newcastle, Eng	0%	2.6%	0.79 [0.04, 14.76]
Vojvodina, Serbia	0%	2.6%	0.41 [0.02, 7.53]
Pooled	$I^2=8\%$		1.09 (0.49-2.45), $p=0.8$

BSI – high risk cohort

Cohort	Event rate	Control rate	Odds ratio
Athens, Greece	11.3%	23.3%	0.42 [0.19, 0.90]
Dundee, Scotland	19.0%	23.3%	0.77 [0.46, 1.31]
Galway, Ireland	31.6%	23.3%	0.76 [0.39, 1.46]
Leuven, Belgium	34.2%	23.3%	1.71 [0.96, 3.05]
Monza, Italy	13.9%	23.3%	0.53 [0.26, 1.09]
Newcastle, Eng	18.8%	23.3%	1.52 [0.85, 2.72]
Vojvodina, Serbia	33.3%	23.3%	1.64 [0.66, 4.09]
Pooled	$I^2=62\%$		0.93 (0.62-1.39), $p=0.7$

FACED – low risk cohort

Cohort	Event rate	Control rate	Odds ratio
Athens, Greece	0%	4.3%	0.10 [0.01, 1.76]
Dundee, Scotland	4.0%	4.3%	0.92 [0.39, 2.18]
Galway, Ireland	10.6%	4.3%	2.66 [1.23, 5.72]
Leuven, Belgium	9.0%	4.3%	2.22 [0.87, 5.63]
Monza, Italy	2.2%	4.3%	0.51 [0.14, 1.88]
Newcastle, Eng	6.6%	4.3%	1.58 [0.56, 4.48]
Vojvodina, Serbia	6.7%	4.3%	1.60 [0.48, 5.29]
Pooled	$I^2=42\%$		1.36 [0.79, 2.33], p=0.3

FACED – high risk cohort

Cohort	Event rate	Control rate	Odds ratio
Athens, Greece	25.0%	62.1%	0.20 [0.07, 0.59]
Dundee, Scotland	32.6%	62.1%	0.30 [0.15, 0.60]
Galway, Ireland	20.0%	62.1%	0.15 [0.03, 0.75]
Leuven, Belgium	64.0%	62.1%	1.08 [0.45, 2.64]
Monza, Italy	25.9%	62.1%	0.21 [0.08, 0.54]
Newcastle, Eng	37.5%	62.1%	0.37 [0.08, 1.60]
Vojvodina, Serbia	33.3%	62.1%	0.30 [0.07, 1.27]
Pooled	$I^2=37\%$		0.33 [0.23, 0.48], p<0.0001

With the inclusion of Ellis et al into the pooled cohort for FACED high risk score:

Cohort	Event rate	Control rate	Odds ratio
Athens, Greece	25.0%	62.1%	0.20 [0.07, 0.59]
Dundee, Scotland	32.6%	62.1%	0.30 [0.15, 0.60]
Galway, Ireland	20.0%	62.1%	0.15 [0.03, 0.75]
Leuven, Belgium	64.0%	62.1%	1.08 [0.45, 2.64]
Monza, Italy	25.9%	62.1%	0.21 [0.08, 0.54]
Newcastle, Eng	37.5%	62.1%	0.37 [0.08, 1.60]
Vojvodina, Serbia	33.3%	62.1%	0.30 [0.07, 1.27]
London, UK (Ellis et al)	33.3%	62.1%	0.30 [0.05, 1.73]
Pooled	$I^2=27\%$		0.33 [0.23, 0.47], p<0.0001

Table S5: Mortality meta-analysis data

Table S5(a): Relative risk of mortality during follow-up. Pooled data are obtained from random effects meta-analysis.

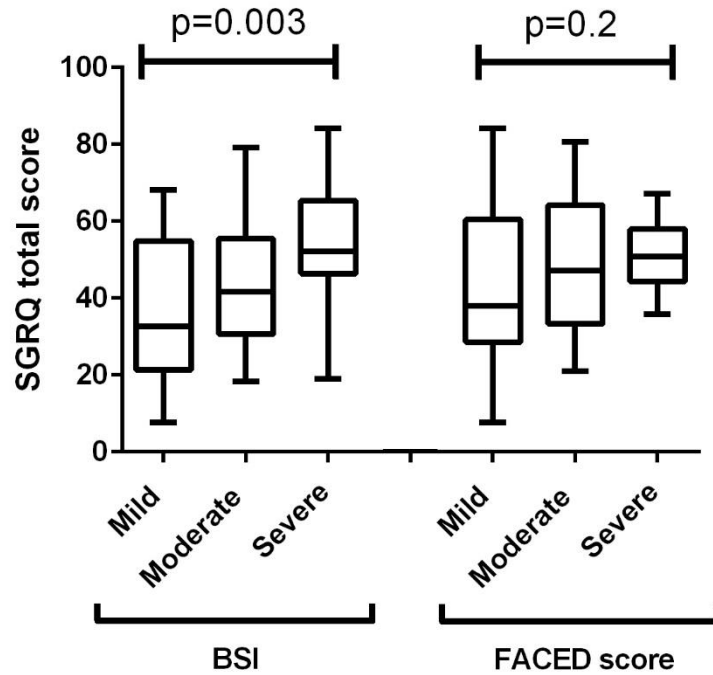
Cohort	Scores	RR – mild	RR – moderate	RR severe
Dundee, Scotland (n=494)	BSI	0.12 (0.02-0.90)	1.00 (reference)	3.09 (1.66-5.77)
	FACED	0.38 (0.18-0.80)	1.00 (reference)	3.15 (1.67-5.94)
Galway, Ireland (n=280)	BSI	0.61 (0.26-1.46)	1.00 (reference)	2.65 (1.39-5.03)
	FACED	0.30 (0.17-0.50)	1.00 (reference)	0.56 (0.15-2.03)
Monza, Italy (n=250)	BSI	0.22 (0.01-4.20)	1.00 (reference)	4.83 (1.39-16.72)
	FACED	0.49 (0.11-2.13)	1.00 (reference)	5.70 (1.81-18.0)
Leuven, Belgium (n=190)	BSI	0.15 (0.04-0.64)	1.00 (reference)	1.35 (0.80-2.28)
	FACED	0.31 (0.15-0.64)	1.00 (reference)	2.19 (1.36-3.54)
Athens, Greece (n=159)	BSI	Not estimable	1.00 (reference)	10.32 (0.62-173.2)
	FACED	0.04 (0.00-0.69)	1.00 (reference)	2.19 (0.66-7.22)
Newcastle, England (n=126)	BSI	0.39 (0.02-9.19)	1.00 (reference)	4.69 (0.65-33.7)
	FACED	0.25 (0.09-0.69)	1.00 (reference)	1.45 (0.48-4.34)
Vojvodina, Serbia (n=113)	BSI	0.05 (0.00-0.76)	1.00 (reference)	1.33 (0.63-2.82)
	FACED	0.23 (0.08-0.65)	1.00 (reference)	1.13 (0.40-3.16)
London, England (N=76) Ellis et al ERJ 2016	BSI	0.25 (0.11-0.60)	1.00 (reference)	2.29 (1.49-3.52)
	FACED	0.30 (0.22-0.41)	1.00 (reference)	2.03 (1.30-3.18)

Table S5(b): Relative risk of mortality during follow-up. Pooled data are obtained from random effects meta-analysis.

Cohort	Scores	RR – mild	RR – moderate	RR severe
Dundee, Scotland (n=494)	BSI	0.12 (0.02-0.90)	1.00 (reference)	3.09 (1.66-5.77)
	FACED	0.38 (0.18-0.80)	1.00 (reference)	3.15 (1.67-5.94)
Galway, Ireland (n=280)	BSI	0.61 (0.26-1.46)	1.00 (reference)	2.65 (1.39-5.03)
	FACED	0.30 (0.17-0.50)	1.00 (reference)	0.56 (0.15-2.03)
Monza, Italy (n=250)	BSI	0.22 (0.01-4.20)	1.00 (reference)	4.83 (1.39-16.72)
	FACED	0.49 (0.11-2.13)	1.00 (reference)	5.70 (1.81-18.0)
Leuven, Belgium (n=190)	BSI	0.15 (0.04-0.64)	1.00 (reference)	1.35 (0.80-2.28)
	FACED	0.31 (0.15-0.64)	1.00 (reference)	2.19 (1.36-3.54)
Athens, Greece (n=159)	BSI	Not estimable	1.00 (reference)	10.32 (0.62-173.2)
	FACED	0.04 (0.00-0.69)	1.00 (reference)	2.19 (0.66-7.22)
Newcastle, England (n=126)	BSI	0.39 (0.02-9.19)	1.00 (reference)	4.69 (0.65-33.7)
	FACED	0.25 (0.09-0.69)	1.00 (reference)	1.45 (0.48-4.34)
Vojvodina, Serbia (n=113)	BSI	0.05 (0.00-0.76)	1.00 (reference)	1.33 (0.63-2.82)
	FACED	0.23 (0.08-0.65)	1.00 (reference)	1.13 (0.40-3.16)
London, England (N=76) Ellis et al ERJ 2016	BSI	0.55 (0.02-12.86)	1.00 (reference)	6.96 (0.87-55.6)
	FACED	0.39 (0.06-2.56)	1.00 (reference)	3.17 (0.56-17.9)
Pooled cohort	BSI	0.29 (0.14-0.61)	1.00 (reference)	2.39 (1.56-3.66)
	FACED	0.30 (0.22-0.41)	1.00 (reference)	2.10 (1.39-3.16)

Figure S1

Health related quality of life using the St. Georges Respiratory Questionnaire (SGRQ) total score across BSI and FACED groups.



The figure shows a significant difference across BSI groups, with differences of 9 and 11 points comparing mild/moderate and moderate/severe respectively. In contrast there were no statistically significant differences between FACED groups, and the between group difference for moderate/severe was below the minimum clinically important difference of 4 units.