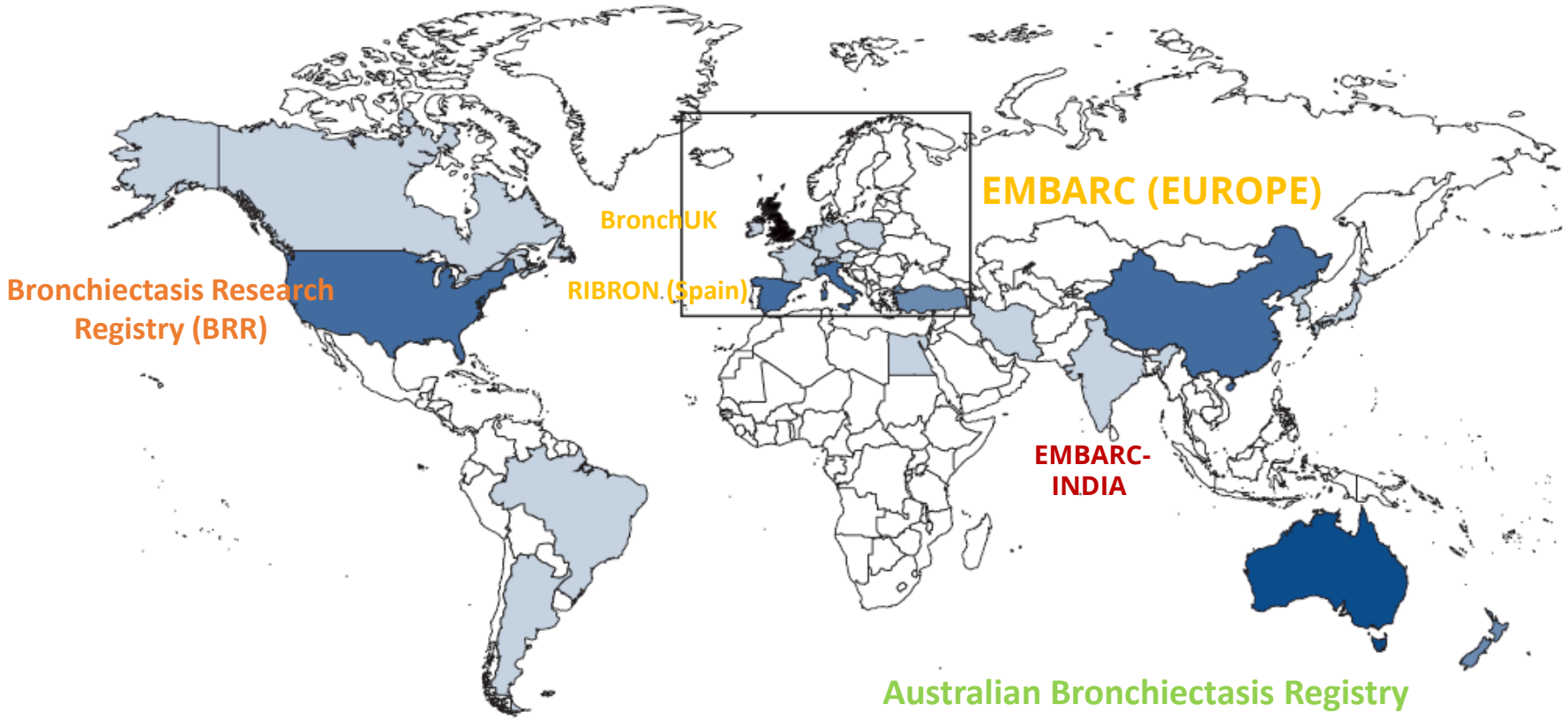
The KMBARC Korean Bronchiectasis Registry: Toward International Networking

울산의대 울산대학교병원
나승원

On behalf of KMBARC and Korean bronchiectasis Study group

Published original research studies in 2000–2015 on adult bronchiectasis worldwide (excluding cystic fibrosis)



KMBARC:
Korean Multicenter Bronchiectasis Audit and Research Collaboration

Chalmers JD, et al. Breathe 2017; 13: 180–192.

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Lee H, Choi H, Sim YS, Park S, Kim WJ, Yoo KH, Lee SJ, Kim TH, Yang B, Jeong I, Um SJ, Kim DK, Lee JH, Kwon BS, Cho YJ, Park HY, Lee CH, Rhee CK, Lee SH, Na JO, Jang AS, Jung JY, Ra SW, Lee JH, Kim SH, Kim C, Kim Y, Lee CY, Kim HK, Lee JS, Lee SW, Oh YM; KMBARC.

BMJ Open. 2020 Jan 19;10(1):e034090. doi: 10.1136/bmjopen-2019-034090.

PMID: 31959610 Free PMC article.

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Chronic Obstructive Pulmonary Disease Is Associated With Decreased Quality of Life in Bronchiectasis Patients: Findings From the **KMBARC** Registry.

Kim SH, Kim C, Jeong I, Lee SJ, Kim TH, Lee CY, Oh YM, Lee H, Kim Y.

Front Med (Lausanne). 2021 Aug 16;8:722124. doi: 10.3389/fmed.2021.722124. eCollection 2021.

PMID: 34490307 Free PMC article.

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Prevalence of depression and its associated factors in bronchiectasis: findings from **KMBARC** registry.

Lee JH, Lee WY, Yong SJ, Kim WJ, Sin S, Lee CY, Kim Y, Jung JY, Kim SH; KMBARC.

BMC Pulm Med. 2021 Sep 27;21(1):306. doi: 10.1186/s12890-021-01675-4.

PMID: 34579692 Free PMC article.

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Clinical Characteristics of Patients with Post-Tuberculosis Bronchiectasis: Findings from the **KMBARC** Registry.

Choi H, Lee H, Ra SW, Kim HK, Lee JS, Um SJ, Kim SH, Oh YM, Kwon YS, On Behalf Of The Kmbarc.

J Clin Med. 2021 Sep 30;10(19):4542. doi: 10.3390/jcm10194542.

PMID: 34640560 Free PMC article.

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Prevalence of chronic rhinosinusitis and its relating factors in patients with bronchiectasis: findings from **KMBARC** registry.

Yu I, Yong SJ, Lee WY, Kim SH, Lee H, Na JO, Kim DK, Oh YM, Lee JH; KMBARC.

Korean J Intern Med. 2022 Sep;37(5):1002-1010. doi: 10.3904/kjim.2022.070. Epub 2022 Aug 18.

PMID: 35977811 Free PMC article.

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Impacts of Asthma in Patients With Bronchiectasis: Findings From the **KMBARC** Registry.

Moon SM, Choi H, Kang HK, Lee SW, Sim YS, Park HY, Kwon YS, Kim SH, Oh YM, Lee H.

Allergy Asthma Immunol Res. 2023 Jan;15(1):83-93. doi: 10.4168/aair.2023.15.1.83.

PMID: 36693360 Free PMC article.

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21. Additional role of bronchial mucosal biopsy for ciliary structural abnormality in diagnosis of primary ciliary dyskinesia – 김현일/박혜윤
22. The association between combined non-cystic fibrosis bronchiectasis and lung cancer in patients with chronic obstructive lung disease – 김연목/김덕겸
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24. The Effects of Bronchiectasis on Asthma Exacerbation – 강혜란/이재형
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26. Bacteriologic Analysis of Expectorated Sputum in Patient with Bronchiectasis – 서광원/안충준
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42. Serum albumin is a predictor of respiratory hospitalization in patients with bronchiectasis – 주선미/이승준
43. Serum hepatocyte growth factor as a predictor of disease severity and future exacerbations in patients with non-cystic fibrosis bronchiectasis – 정홍원/이승준,이충덕
44. Trends in the Prevalence of Non-TB Mycobacterial Infection in Patients With Non-Cystic Fibrosis Bronchiectasis in South Korea, 2012-2016 – 이승준/이충덕
45. Clinical Characteristics of Patients with Post-Tuberculosis Bronchiectasis: Findings from the KMBARC Registry – 최하영,이현/권용수
46. Evaluating the Prevalence and Incidence of Bronchiectasis and Nontuberculous Mycobacteria in South Korea Using the Nationwide Population Data – 박다인/최승혜
47. Cardiovascular and cerebrovascular-associated mortality in patients with preceding bronchiectasis exacerbation – 이상철,손강주/정지애,박선철
48. Factors Predicting Worse Outcomes in an Asian Cohort of Patients With Bronchiectasis – 김규연/김진우
49. Risk Factors of Incident Lung Cancer in Patients with Non-Cystic Fibrosis Bronchiectasis: A Korean Population-Based Study – 김유림,한경도/최하영,이현
50. Clinical Impact of the Bronchiectasis with Chronic Bronchitis Symptoms in COPD: Analysis of a Longitudinal Cohort – 김은경/이지현
51. Non-Cystic Fibrosis Bronchiectasis Increases the Risk of Lung Cancer Independent of Smoking Status – 최하영,박혜윤/손장원,이현
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57. Gastro-oesophageal reflux disease increases healthcare use and medical costs in patients with bronchiectasis: a Korean nationwide population-based study – 윤재훈,김상혁,류지인/최하영,이현
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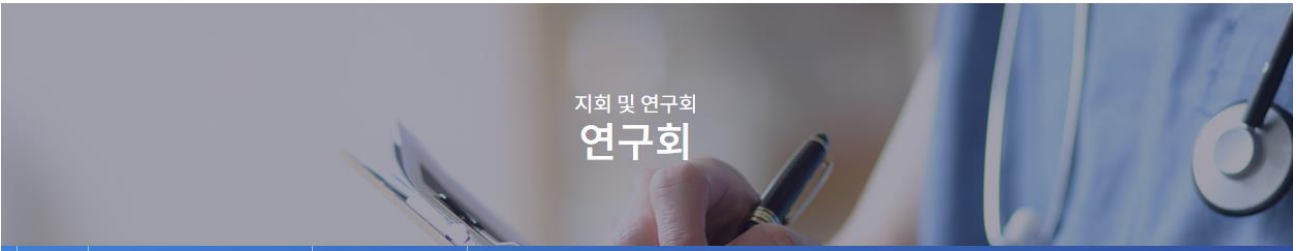

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공지	심포지엄 (기관지확장증 주제) 다시보기 및 제 5차 세계 기관지확장증 conference 안내 메일보내기	조회수 : 18 / 추천수: 0 수정 / 삭제	13 2022.02
공지	연구회 연구비 공모 안내 메일보내기	조회수 : 6 / 추천수: 0 수정 / 삭제	09 2022.08
공지	2022년 우수 연구회 선정 메일보내기 2022년도 우수연구회 표창장.jpg 2022년도 우수연구회 시상 사진.jpg	조회수 : 2 / 추천수: 0 수정 / 삭제	20 2022.11

현재 기관지확장증 연구회 멤버

기관지확장증 연구회

알림 | 게시판 | 일정 | 멤버 | 멤버관리

번호	이름	소속
105	김태우	경희의료원
104	서혜원	경북대학교병원
103	장혜진	명지병원
102	박진경	강동경희대학교병원
101	이장호	서울아산병원
100	임수정	동아대병원
99	유창민	경찰 병원
98	최준영	인천성모병원
97	채강희	울산대학교병원
96	김은영	신촌세브란스병원

결핵연구회: 218

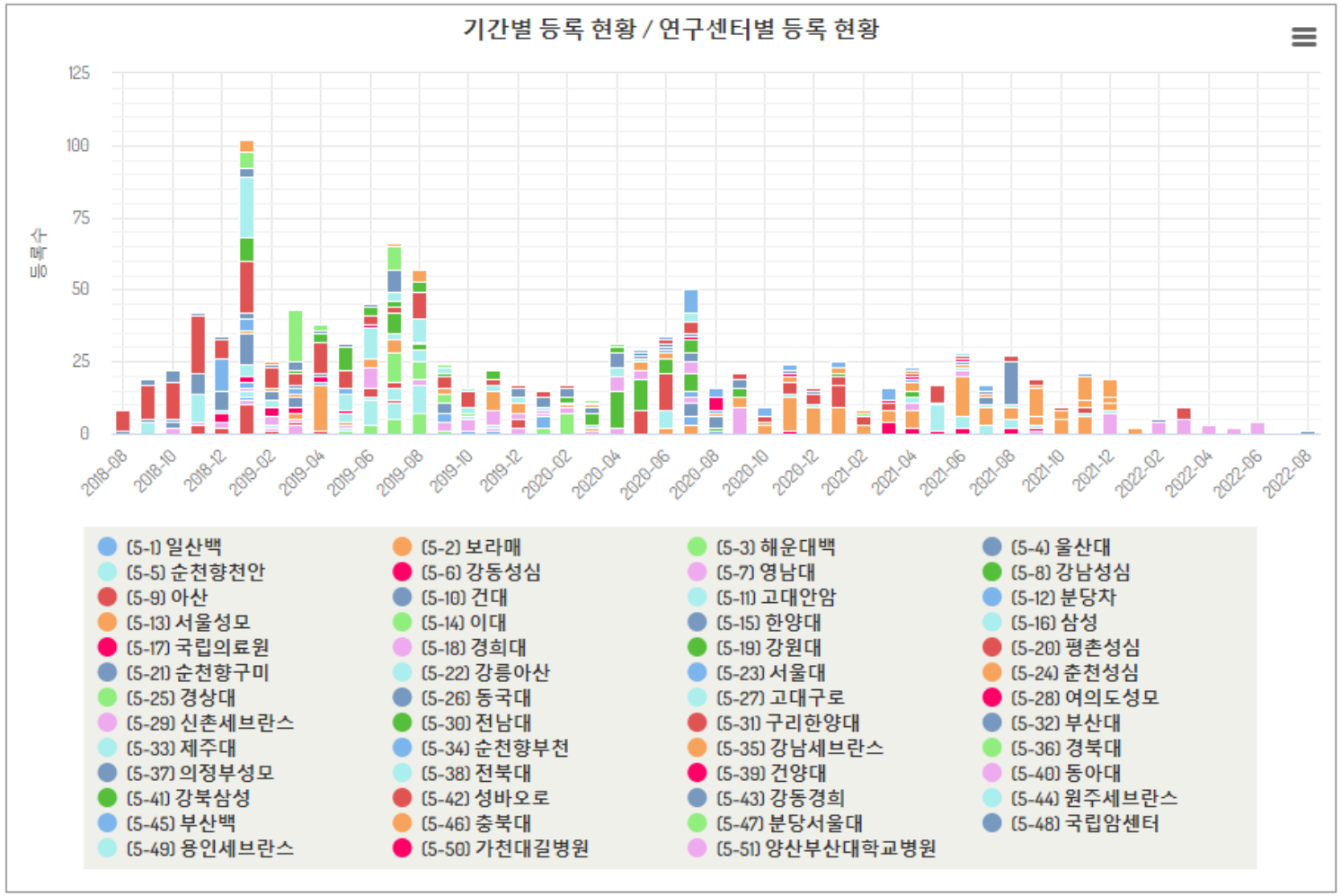
COPD: 176

분자폐암: 112

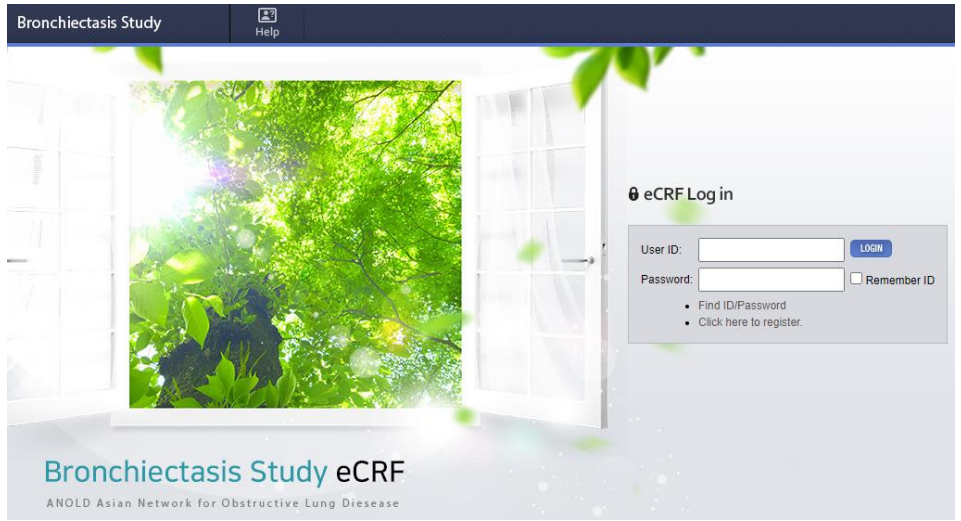
ILD: 105

KMBARC registry

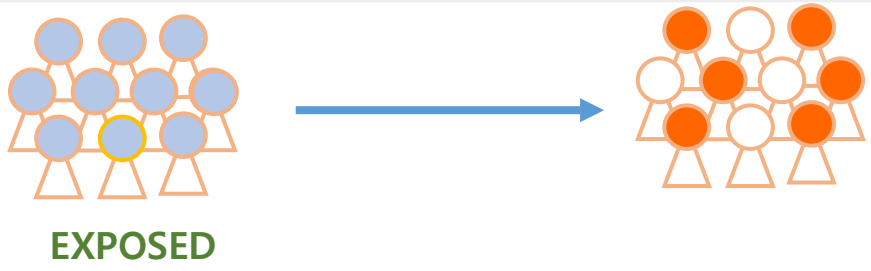
- 한국 다기관 기관지확장증 환자 특성 연구
  - ✓ 2018.8월 등록 시작, 참여 기관 – 51개 기관, 입적 환자 수 – 1,141명



- 코호트 연구 및 연구자 네트워크
  - ✓ 추적관찰 및 악화예측, 예후인자 연구
  - ✓ 기관지확장증 연구회에서 운영 관리
    - eCRF: http://study.anold.org/
    - Data cleaning, 연구간호사 1명



COHORT STUDY



EXPOSED

Start with exposure

NOT EXPOSED

Check for outcome

RISK OF ● = 6/10

RISK OF ● = 3/10

TIME

Case control

Check for exposure

have outcome cases

Start with outcome

don't have outcome controls

ODDS OF ● = 7/3

ODDS OF ● = 3/7

Odds Ratio vs. Risk Ratio (Relative Risk)

Thrombophilia		With AV fistula thrombosis	Without AV fistula thrombosis	
	Yes	59	122	59+122 = 181
	No	48	190	48+190 = 238
	OR = (59/48)(122/190) = 1.91 Risk ratio = (59/181)(48/238) = 1.65			

Thrombophilia		With AV fistula thrombosis	Without AV fistula thrombosis	
	Yes	59	244	59+244 = 303
	No	48	380	48+380 = 428
	OR = (59/48)(244/380) = 1.91 Risk ratio = (59/303)(48/428) = 1.77			

Kidney Int. 2007;72(7)789-91

기본정보 (나이, 성별, 키, 몸무게)

Co-morbidities

비호흡기 치료

Spirometry

호흡기 증상

악화, 입원

BHQ (Bronchiectasis Health Questionnaire)

PHQ-9 (Patient Health Questionnaire)

FSS (Fatigue Severity Score)

과거 병력 및 검사력

미생물 검사 결과

CT 결과

호흡기 치료 (약제, 물리치료)

BMJ Open

KMBARC registry: protocol for a multicentre observational cohort study on non-cystic fibrosis bronchiectasis in Korea

Hyun Lee,[1] Hayoung Choi ,[2] Yun Su Sim,[2] Shinhee Park,[3] Woo Jin Kim,[4] Kwang Ha Yoo,[5] Seung Jun Lee,[6] Tae-Hyung Kim,[7] Bumhee Yang,[8] Ina Jeong,[9] Soo-Jung Um,[10] Deog Kyeom Kim,[11] Ji-Hyun Lee,[12] Byoung Soo Kwon,[13] Young-Jae Cho,[13] Hye Yun Park,[14] Chang-Hoon Lee,[15] Chin Kook Rhee,[16] Sang Haak Lee,[17] Ju Ock Na,[18] An-Soo Jang,[19] Ji Ye Jung,[20] Seung Won Ra,[21] Ji-Ho Lee,[22] Sang-Ha Kim,[22] Changhwan Kim,[23] Youlim Kim,[24] Chang Youl Lee,[24] Hyun Kuk Kim,[25] Jae Seung Lee,[26] Sei Won Lee,[26] Yeon-Mok Oh ,[26] on behalf of the KMBARC

To cite: Lee H, Choi H, Sim YS, *et al*. KMBARC registry: protocol for a multicentre observational cohort study on non-cystic fibrosis bronchiectasis in Korea. *BMJ Open* 2020;**10**:e034090. doi:10.1136/bmjopen-2019-034090

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2019-034090).

HL and HC contributed equally.

Received 05 September 2019
Revised 10 December 2019
Accepted 17 December 2019

ABSTRACT

Introduction Despite the significant disease burden of bronchiectasis in Korea, no large-scale, representative prospective cohort studies have been conducted to evaluate the clinical characteristics of Korean patients with bronchiectasis, indicating an urgent need for cohort studies on bronchiectasis.

Methods and analysis The Korean Multicenter Bronchiectasis Audit and Research Collaboration (KMBARC) is a prospective, non-interventional observational cohort study on bronchiectasis in Korea. The inclusion criteria of this registry are as follows: (1) adult patients (aged ≥18 years) with or without respiratory symptoms (cough, chronic sputum and/or recurrent respiratory infection) and chest computed tomography revealing bronchiectasis affecting one or more lobes and (2) stable status at the time of registration: patients with bronchiectasis who were admitted for a respiratory aetiology can be enrolled at least 4 weeks after hospital discharge. The exclusion criteria are as follows: (1) bronchiectasis due to cystic fibrosis; (2) traction bronchiectasis associated with interstitial lung disease; (3) patients actively being treated for pneumonia, pulmonary tuberculosis or non-tuberculous mycobacterial infection; (4) patients who are unable or unwilling to provide informed consent; and (5)

Strengths and limitations of this study

- This is the first prospective cohort study on patients with bronchiectasis in Korea.
- We will recruit and follow-up patients with bronchiectasis annually using a standardised protocol to improve the quality of data collection.
- Sharing similar case-reporting forms with European Multicentre Bronchiectasis Audit and Research Collaboration (EMBARC) will allow collaboration studies with EMBARC.
- Distinctive features of the Korean Multicenter Bronchiectasis Audit and Research Collaboration registry (KMBARC) will provide several novel findings of bronchiectasis, which might be difficult to be elucidated using other registries.
- This study is limited by a lack of collecting patient samples.

natural course of bronchiectasis; (2) aiding in establishing evidence-based bronchiectasis guidelines in Korea; and (3) encouraging and facilitating studies on bronchiectasis in Korea.

Inclusion criteria

- 흉부 CT상 기관지확장이 **1개 엽(lobe) 또는 그 이상**이 존재
  - ✓ CT는 최근 5년 이내 촬영한 것이면 사용가능
  - ✓ Stable state(담당의사 판단)로 호흡기 증상으로 입원한 경우 퇴원 후 최소 4주 이후 입적 가능
  - ✓ 증상이나 병력이 없어도 됨 (한국 특이 내용)
    - 증상이나 병력 - 기침, 만성 가래, 객혈, 반복 호흡기감염 중 하나 또는 그 이상이 존재

- EMBARC은 아래 기준 1과 2 모두 충족해야 함.
  - ✓ Chest CT demonstrating bronchiectasis : (bronchial dilatation) affecting 1 or more lobes
  - ✓ History consistent w/ bronchiectasis : cough, chronic sputum production, &/or recurrent respiratory infections

Exclusion criteria

- Exclusion criteria
  - ✓ Bronchiectasis due to known cystic fibrosis
  - ✓ Age <18 years
  - ✓ **Traction bronchiectasis associated with interstitial lung disease**
  - ✓ During active treatment against pneumonia, TB, or NTM
  - ✓ Patients who are unable or unwilling to provide informed consent
  - ✓ Patients who are pregnant

Study Design

- 연구 디자인: 전향적 환자 코호트 연구
- 연구 기간: 5년 = 입적 2년 + 추적 3년
- 추적 간격: 1년 마다
- 목표 환자수: 1,120명 (기관당 20-30명, 경쟁 모집)
  - ✓ 표본수 산정
    - 기관지확장증 표현형 아군이 5개로 나뉜다는 가정아군 별 예후 예측 인자 평가하기 위해서 다변량 분석 (Cox proportional hazard analysis)을 시행 예정이고 투입할 독립변수를 19개로 할 예정이다. 따라서, 아군 당 표본수는 15%의 탈락률를 감안하여 224명 (19개 독립변수 X 10 = 190 + 15% 탈락률)이 필요하고 전체 표본수는 224 x 5 = 1120명이 필요

Study Design

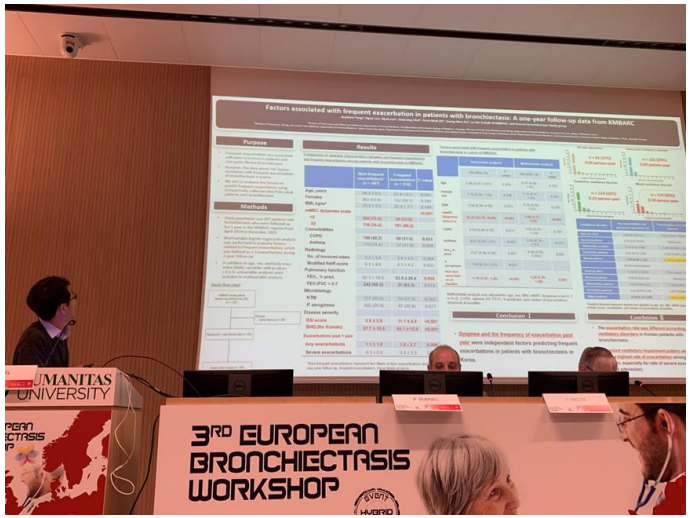
- 종속변수 (outcome): **악화** 발생
  - ✓ 기관지확장증 악화는 **최소 48시간 이상 주요 증상 3개 이상이 나빠져서 치료가 변경될 때**로 정의한다.
  - ✓ 주요 증상
    - 기침, 객담 양/점도, 객담 화농성, 호흡곤란/운동불내성, 피곤/권태감, 객혈

- 독립변수 (19개)
  - ✓ 나이, 성별, 체질량지수
  - ✓ mMRC, 기침, 객담, 객혈
  - ✓ 우울증 점수, 삶의 질 점수, 피로도점수
  - ✓ CT 영상 점수, FEV_1, Lung Volume, DL_{CO}
  - ✓ 객담 세균 검출, 객담 세균 내성 여부
  - ✓ 지난 1년 악화력, 운동능력, 동반질환 점수

CRF 특성 – KMBARC

- 기본적으로 **EMBARC CRF**를 참고
- 차이점
  - ✓ 폐기능 검사 - Pre- and post-bronchodilator 구분해서 기록
  - ✓ 일부 변수 추가
    - 주소지
    - 흉역
    - 안정시 ESR/CRP
    - Systemic steroid 사용
    - 입원정보 – 기계환기, 중환자실, BNP, 입원요인(폐렴, 객혈), 호흡기바이러스
  - ✓ 삶의 질 – QOL-B → BHQ
  - ✓ 우울증, 피로도 추가 - PHQ, FSS

Toward International Networking



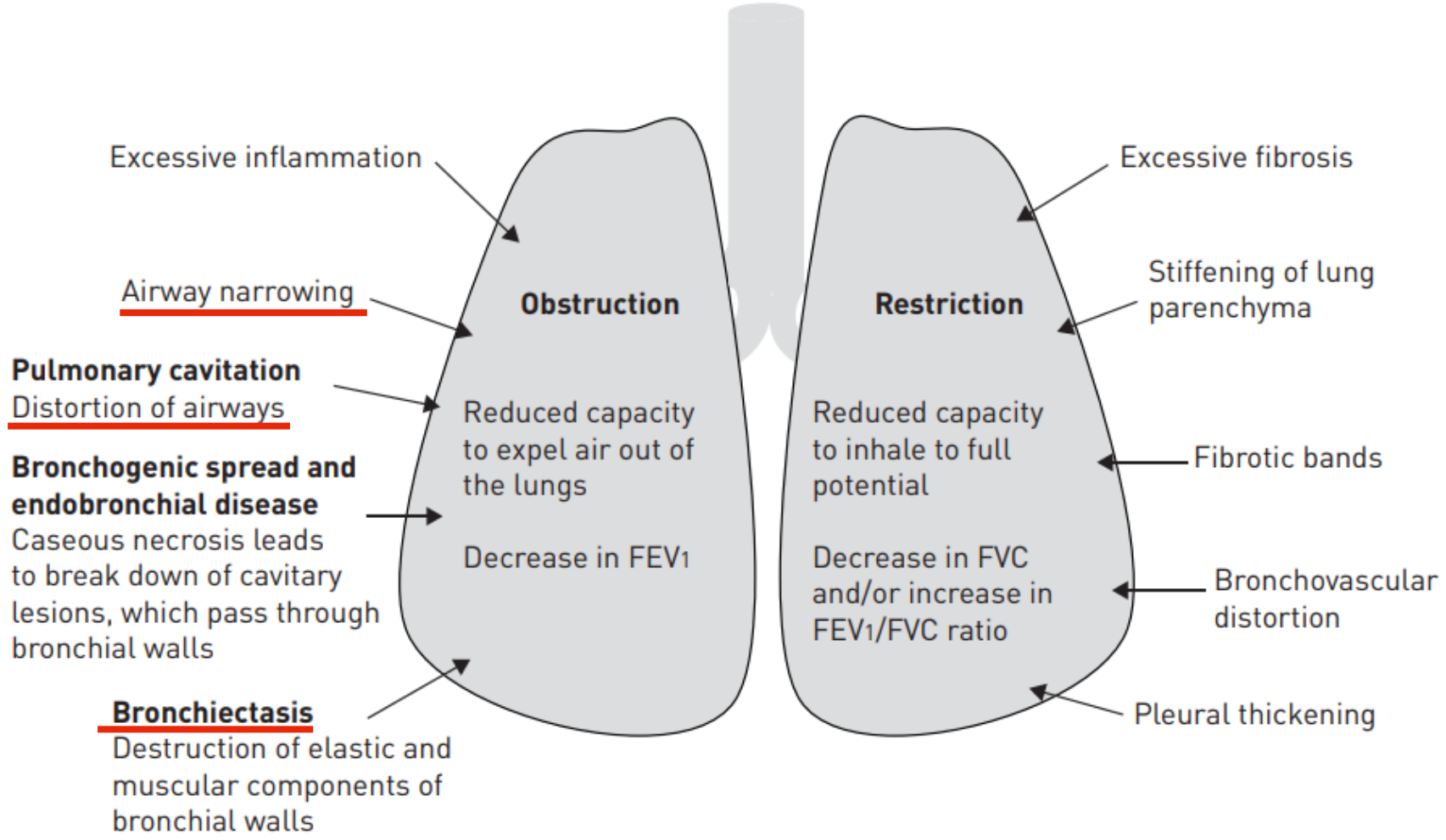
Characteristics of bronchiectasis in Korea: First data from the Korean Multicentre Bronchiectasis Audit and Research Collaboration registry and comparison with other international registries

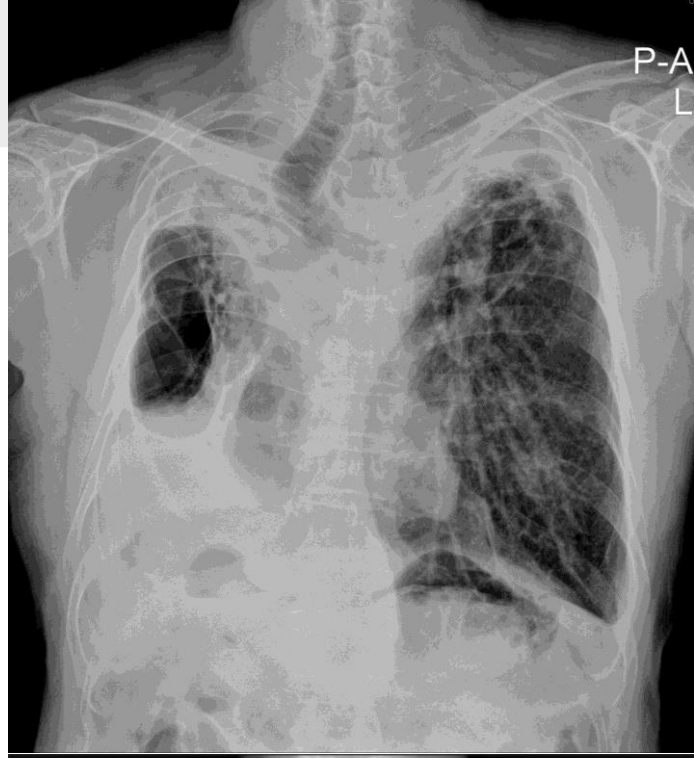
Respirology. 2021;26:618–620

Hyun Lee[1]
Hayoung Choi[2]
James D. Chalmers[3]
Raja Dhar[4]
Tu Q. Nguyen[5]
Simone K. Visser[6]
Lucy C. Morgan[7]
Yeon-Mok Oh[8]

	Korea (*n* = 598)	Australia (*n* = 653)	Europe[a] (*n* = 2596)	India[a] (*n* = 2195)
Clinical status				
mMRC dyspnoea scale	1 (1–1)	1 (0–2)	2 (1–3)	2 (1–3)
Exacerbation in the previous year	1 (0–2)	1 (0–2)	2 (0–3)	1 (0–2)
≥1 Hospital admission in the previous year	109 (18.2)	199 (30.5)	672 (25.9)	851 (38.8)
Functional status				
FEV_1, % predicted	65.4 (52.0–78.7)	79.4 (61.0–96.5)	73.8 (54.0–92.1)	61.4 (41.9–80.5)
Microbiology				
Pseudomonas aeruginosa	66 (11.0)	122 (18.7)	389 (15.0)	301 (13.7)
Haemophilus influenzae	9 (1.5)	63 (9.7)	569 (21.9)	11 (0.5)
Staphylococcus aureus	4 (0.7)	17 (2.6)	156 (6.0)	50 (2.3)
Moraxella catarrhalis	3 (0.5)	14 (2.1)	154 (5.9)	22 (1.0)
Enterobacteriaceae	23 (3.9)	12 (1.8)	158 (6.1)	215 (9.8)
Aetiology of bronchiectasis (top five in orders)				
First	Idiopathic (41%)	Idiopathic (29%)	Idiopathic (42%)	TB (36%)
Second	TB (20%)	Post-infective (27%)	Post-infective (17%)	Post-infective (22%)
Third	Post-infective (20%)	NTM (7%)	COPD (9%)	Idiopathic (21%)
Fourth	Asthma (5%)	PCD (4%)	Asthma (6%)	ABPA (9%)
Fifth	NTM (4%)	ABPA (4%)	Connective tissue diseases (6%)	COPD (5%)

Lung function in TB destroyed lung





Eur Respir Rev 2018; 27: 170077

Australian adults with bronchiectasis: The first report from the Australian Bronchiectasis Registry

Simone K. Visser[a,*], Peter T.P. Bye[a], Greg J. Fox[a], Lucy D. Burr[b], Anne B. Chang[c], Chien-Li Holmes-Liew[d], Paul King[e], Peter G. Middleton[f], Graeme P. Maguire[g], Daniel Smith[h], Rachel M. Thomson[i], Enna Stroil-Salama[j], Warwick J. Britton[k], Lucy C. Morgan[l]

Respiratory Medicine. 2019; 155: 97–103

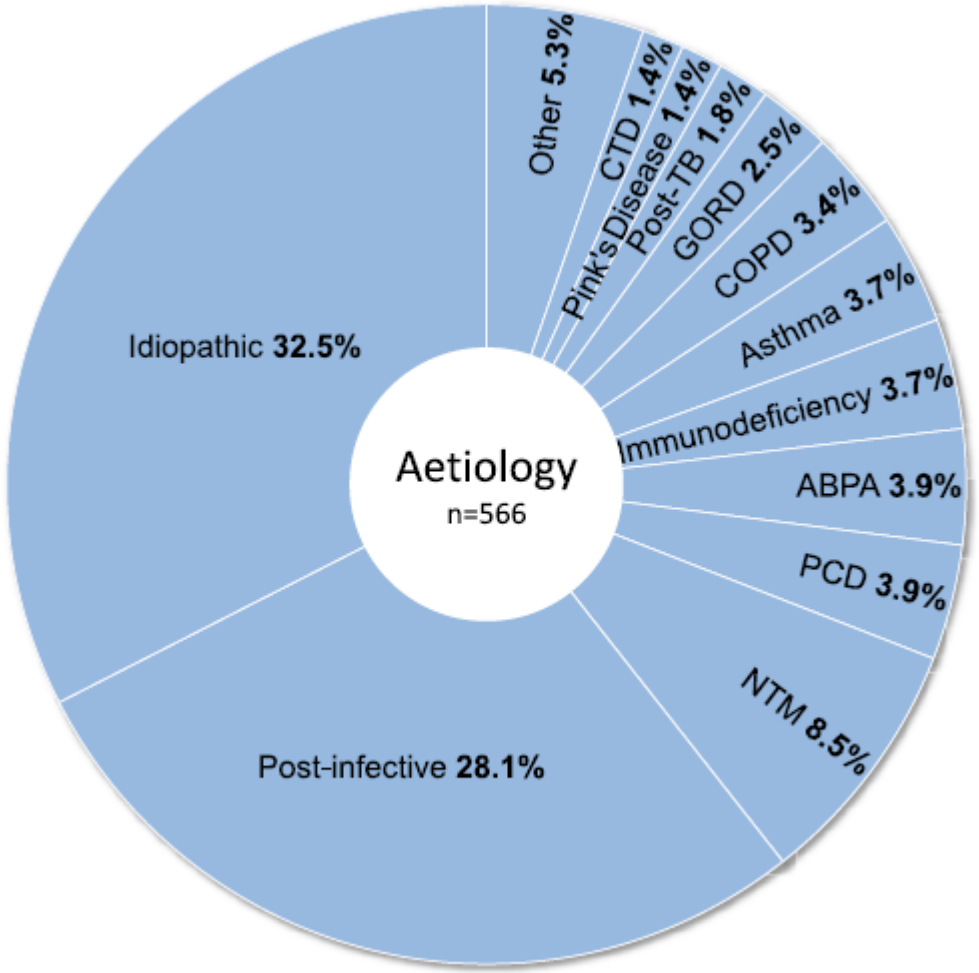


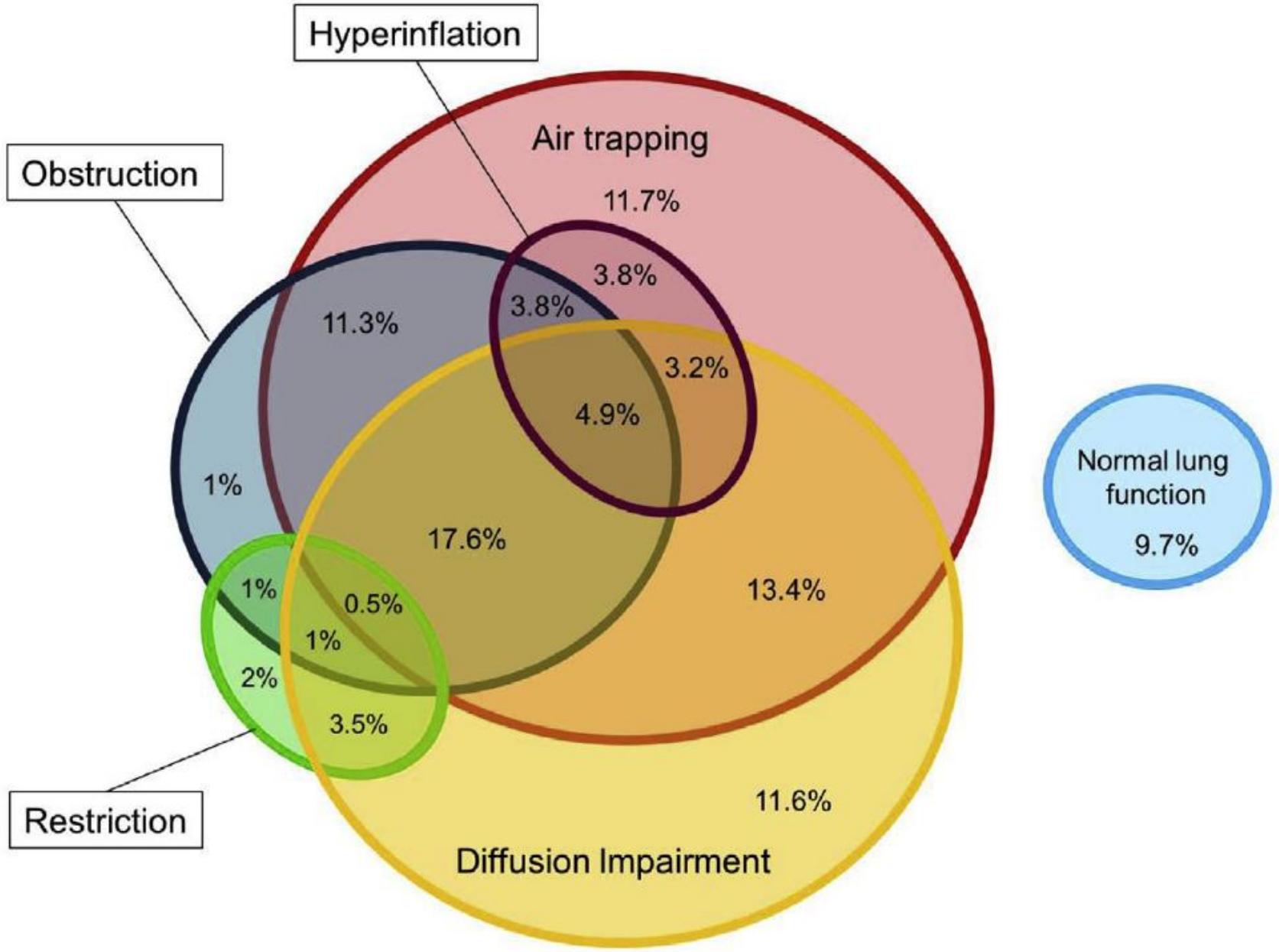
Table 2

Baseline characteristics of the Australian adult bronchiectasis cohort.

	Result
Spirometric Indices	
FEV_1 %pred	75 (57–91)
FVC %pred	84 (71–97)
Normal Spirometry[a]	239 (48%)
Airflow Obstruction	
$FEV_1/FVC < LLN$	168 (34%)
$FEV_1/FVC < 0.7$	252 (50%)
Restrictive Pattern[b]	72 (15%)

A comprehensive approach to lung function in bronchiectasis

- A multicenter, prospective, observational study in Italy
- 187 bronchiectasis patients based on data from spirometry, plethysmography and DL_{CO}.



Etiology and characteristics of patients with bronchiectasis in Taiwan: a cohort study from 2002 to 2016

Huang et al. BMC Pulmonary Medicine (2020) 20:45

Table 3 The time trend in etiology of non-CF bronchiectasis

	N = 15,729	2002~2006 *N* = 6263	2007~2011 *N* = 4569	2012~2016 *N* = 4897	*p* value
Etiology					
Idiopathic	5036 (32.0)	1990(31.8)	1533(33.6)	1513(30.9)	0.4752
Post-infection					
Tuberculosis	1950 (12.4)	845(13.5)	575(12.6)	530(10.8)	<.0001
Pneumonia	3766(23.9)	1376(22.0)	1102(24.1)	1288(26.3)	<.0001

Table 2 Clinical characteristics by etiology of bronchiectasis

	Total (*N* = 15,729)	Idiopathic (*n* = 5036)	Tuberculosis (*n* = 1950)	Other infection (*n* = 3766)
Pulmonary function				
Restriction	2301(28.5)	658(32.0)	275(30.4)	718(36.2)
Normal or Obstruction				
$FEV_1 > 80$	3286(40.7)	1055(51.3)	308(34.0)	667(33.6)
FEV_1 50–80	1539(19.1)	259(12.6)	193(21.3)	353(17.8)
$FEV_1 < 50$	938(11.6)	84(4.1)	130(14.3)	246(12.4)

Independent predictors for exacerbation

Am J Respir Crit Care Med. 2018 Jun 1;197(11):1410-1420

Table 2. Adjusted and Unadjusted Incident Rate Ratios for Exacerbation Frequency during Follow-up

	Unadjusted			Adjusted		
	IRR	95% CI	*P* Value	IRR	95% CI	*P* Value
0 Exacerbations	1.0 (reference)			1.0 (reference)		
1 Exacerbation	1.73	1.47–2.02	<0.0001	1.81	1.54–2.12	<0.0001
2 Exacerbations	3.14	2.70–3.66	<0.0001	3.07	2.62–3.60	<0.0001
3 Exacerbations	5.97	5.27–6.78	<0.0001	5.18	4.51–5.95	<0.0001
Age (per 10 yr)	1.00	0.96–1.03	0.8	0.96	0.95–1.03	0.6
Sex (M)	1.11	1.00–1.23	0.04	0.95	0.86–1.06	0.4
MRC dyspnea score	1.24	1.19–1.29	<0.0001	1.02	0.97–1.07	0.4
FEV_1% predicted (per 10%)	0.88	0.87–0.90	<0.0001	0.96	0.94–0.98	0.001
Reiff score	1.04	1.03–1.06	<0.0001	1.02	1.00–1.03	0.05
Smoking history	1.22	1.10–1.35	<0.0001	0.95	0.85–1.06	0.3
Haemophilus influenzae	1.07	0.96–1.20	0.2	1.13	1.01–1.28	0.04
Moraxella catarrhalis	0.94	0.78–1.14	0.5	0.94	0.77–1.15	0.5
Staphylococcus aureus	1.19	0.97–1.45	0.1	1.08	0.88–1.32	0.5
Enterobacteriaceae	1.30	1.08–1.57	0.006	0.99	0.82–1.20	0.9
Pseudomonas aeruginosa	1.94	1.69–2.23	<0.0001	1.20	1.04–1.40	0.01
Asthma	1.22	1.03–1.44	0.02	1.16	0.98–1.38	0.09
COPD	1.89	1.66–2.16	<0.0001	1.43	1.22–1.67	<0.0001
Idiopathic	0.72	0.65–0.79	<0.0001	0.92	0.83–1.02	0.1

- History of frequent exacerbations ≥ **3**/year
  - ✓ The strongest predictor of future exacerbations (IRR 5.18) and associated with Worse QOL, hospital admission ↑, mortality ↑
- FEV_1 % predicted
- Radiological severity
- *H. influenza* & *P. aeruginosa* infection
- Co-existing COPD

Clinical outcomes of bronchiectasis in India: data from the EMBARC/Respiratory Research Network of India registry

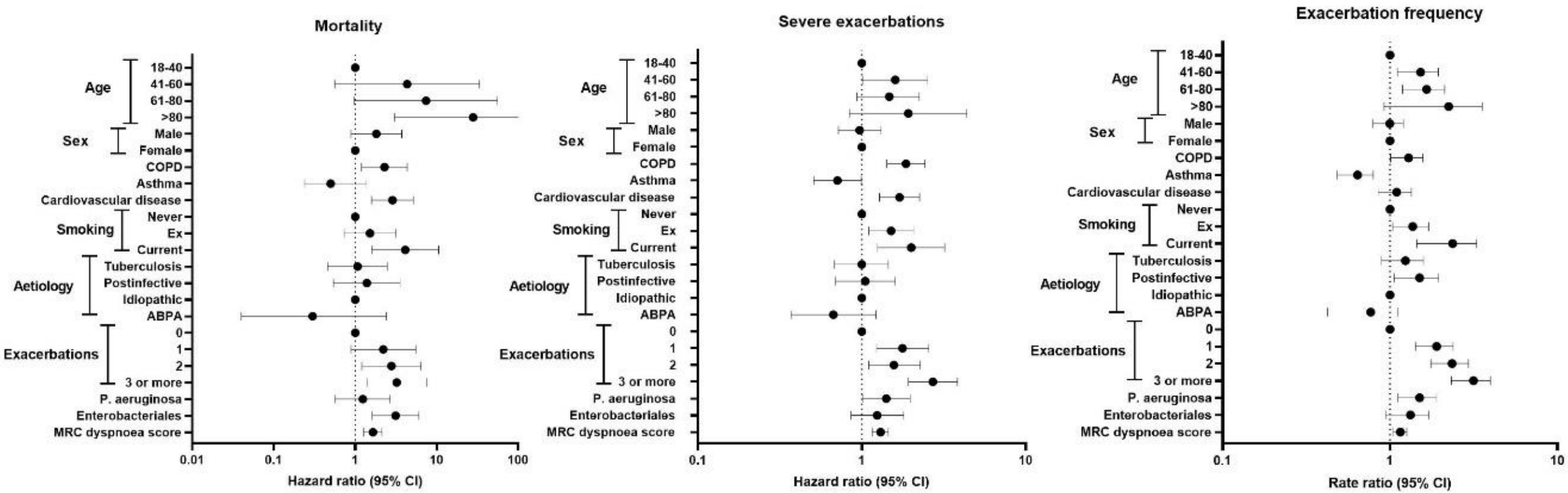
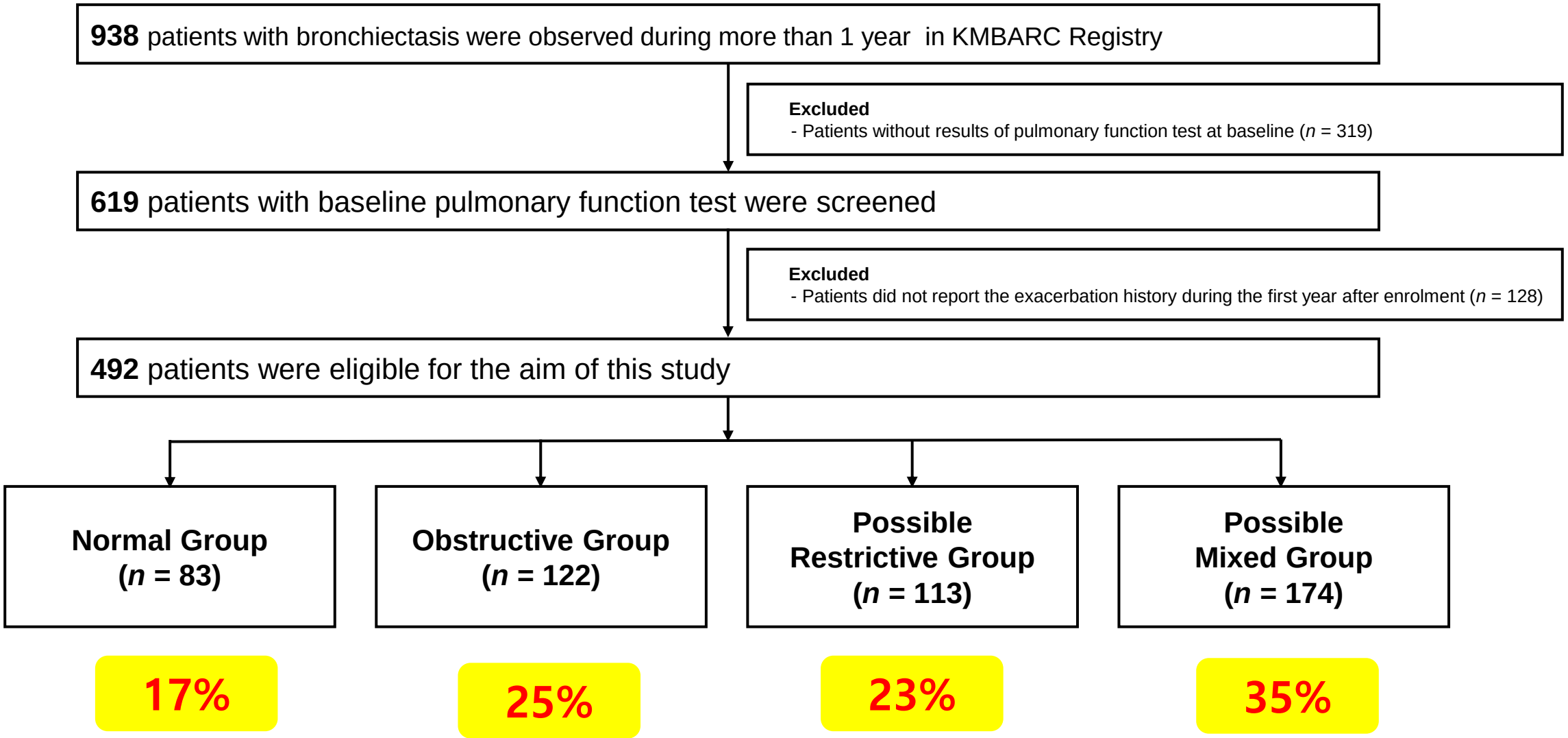


Figure S1. Multivariable models of outcomes after adjusting for relevant confounders

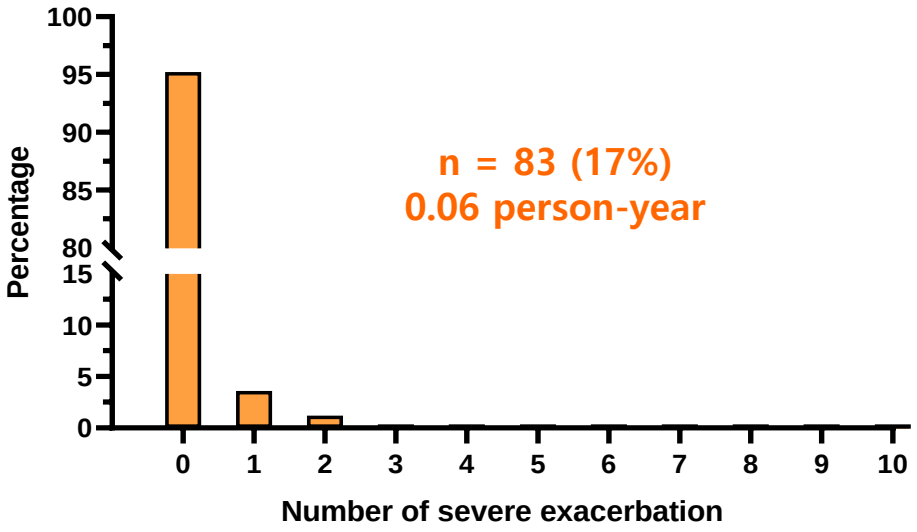
Flow chart for selecting study subjects from KMBARC registry



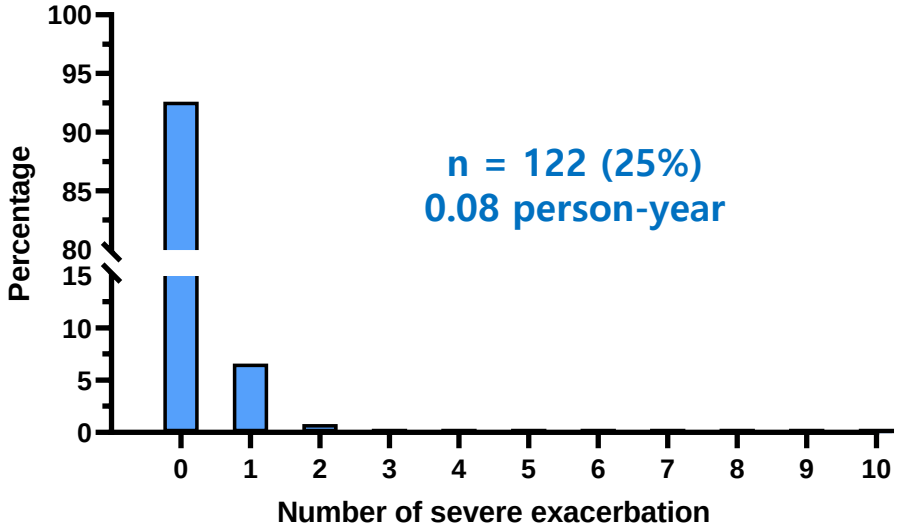
JH Lee *et al.* In preparation for submission

Exacerbation rate according to ventilatory disorders

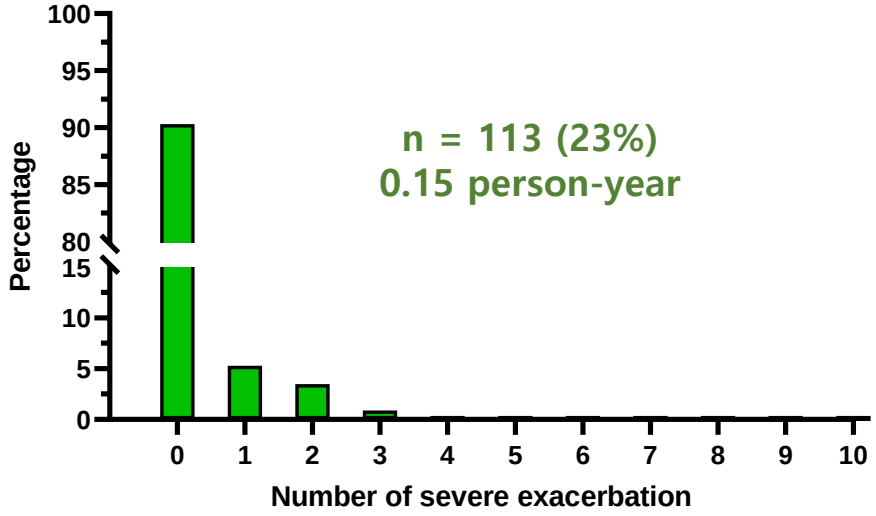
Normal spirometry



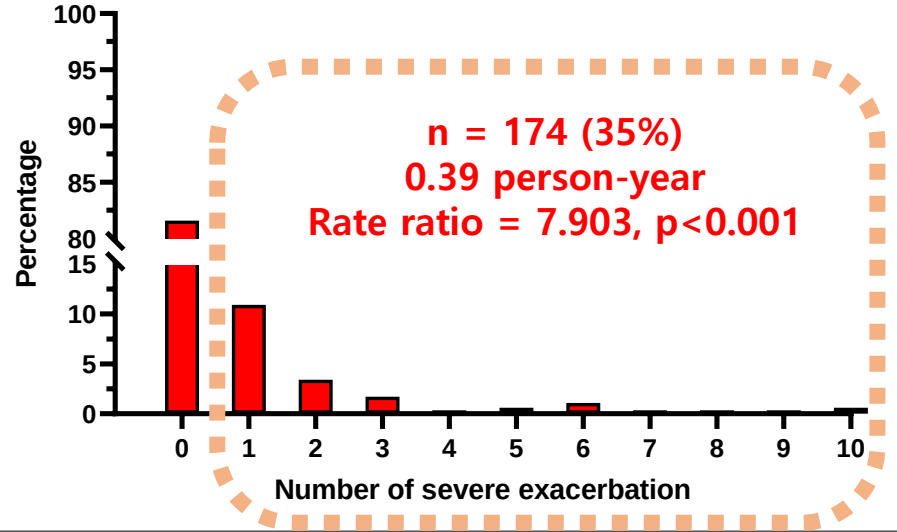
Obstructive ventilatory disorder



Restrictive ventilatory disorder

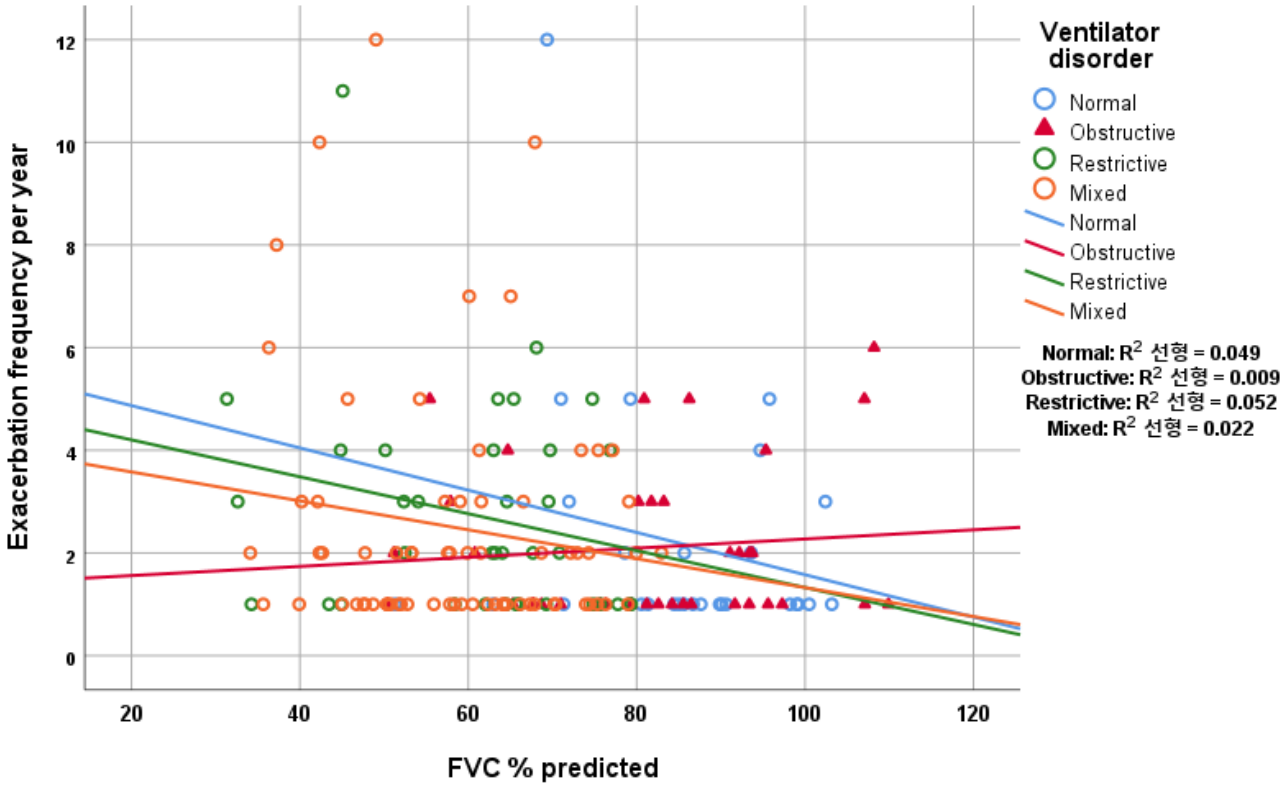


Mixed ventilatory disorder

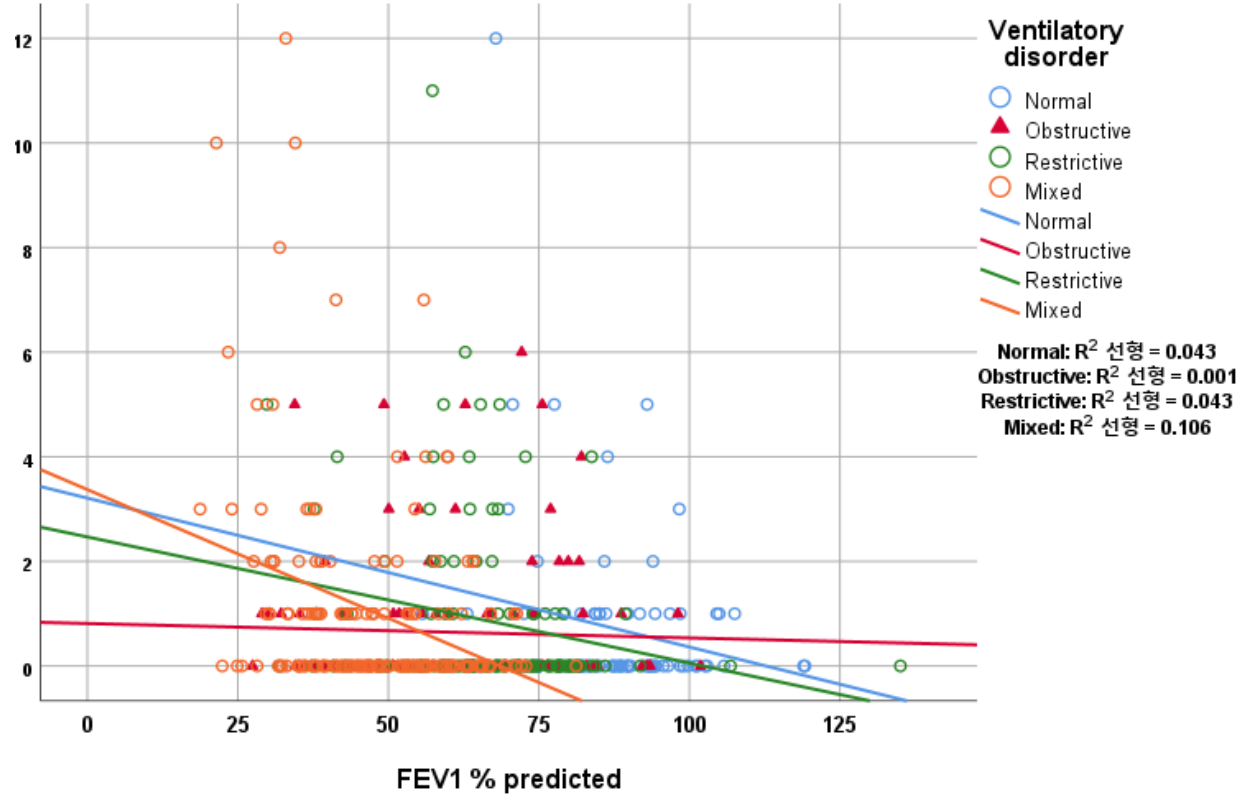


Type of ventilatory impairment modifies the effect of FVC or FEV_1 on the rate of bronchiectasis exacerbation

***P* for interaction = 0.006**



***P* for interaction = 0.005**



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COPD-related Bronchiectasis; Independent Impact on Disease Course and Outcomes

Airway obstruction

Timothy Gatheral, Neelam Kumar, Ben Sansom, Dilys Lai, Arjun Nair, Ioannis Vlahos & Emma H. Baker

Table 2. Demographics and lung function of patients with increasing severity bronchiectasis

	Bronchiectasis					
	Absent	Minor	Mild	Moderate	Severe	*p* value
Age (years) (n)	69 ± 11 (128)	72 ± 11 (112)	74 ± 10 (81)	72 ± 11 (62)	72 ± 11 (23)	**0.004**
Male sex (%)	50	52	56	73	70	**0.001**
	Lung function					
FEV_1 %predicted (n)	51 ± 19 (63)	51 ± 21 (57)	55 ± 28 (42)	51 ± 25 (36)	61 ± 27 (10)	0.627
FEV_1:FVC %	55 ± 16	54 ± 17	55 ± 16	51 ± 17	68 ± 21	0.088
DLCOc %predicted (n)	47 ± 16 (31)	48 ± 24 (26)	50 ± 26 (24)	43 ± 18 (22)	41 ± 11 (6)	0.700
RV % predicted (n)	181 ± 57 (22)	174 ± 51 (19)	177 ± 58 (19)	185 ± 90 (17)	89 ± 31 (5)	0.054
TLC % predicted	118 ± 19	117 ± 21	120 ± 23	124 ± 23	79 ± 15	**0.002**
RV:TLC %	61 ± 13	60 ± 9	59 ± 13	57 ± 19	51 ± 13	0.608

COPD. 2014 Dec;11(6):605-14.

mon Izhakian (Israel)
antar (Italy)
Tobias Welte (Germany)

The Bridge for international networking: BRIDIGE study

- **B**ronchiectasis **R**esearch **I**nvolving **D**atabases, **G**enomics and **E**ndotyping

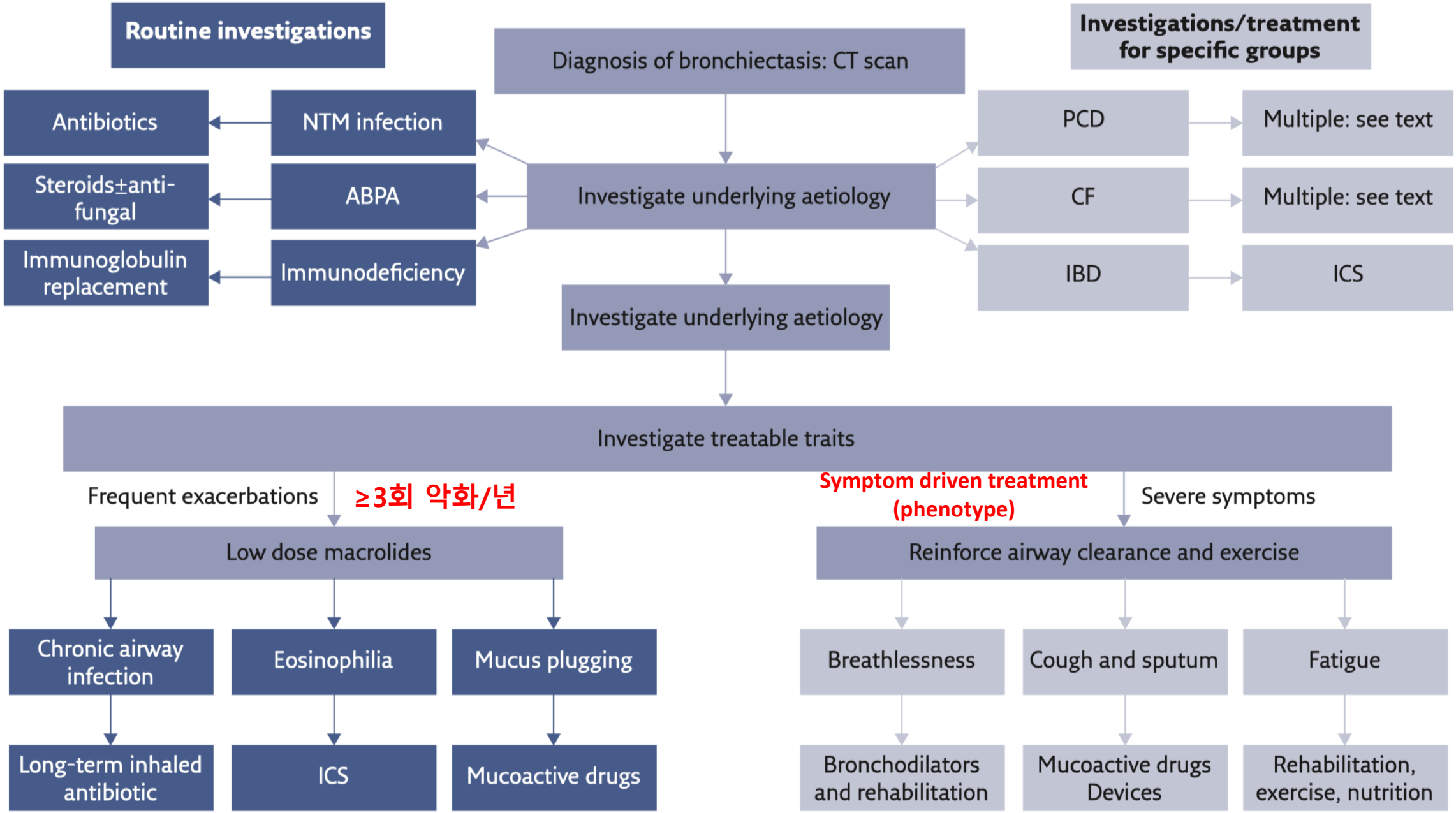
- A prospective, international cohort study: 1,000 participants

- Primary Objective

  ✓ To determine molecular endotypes of bronchiectasis which can guide response to treatment.

- Primary outcome: Frequency of exacerbations

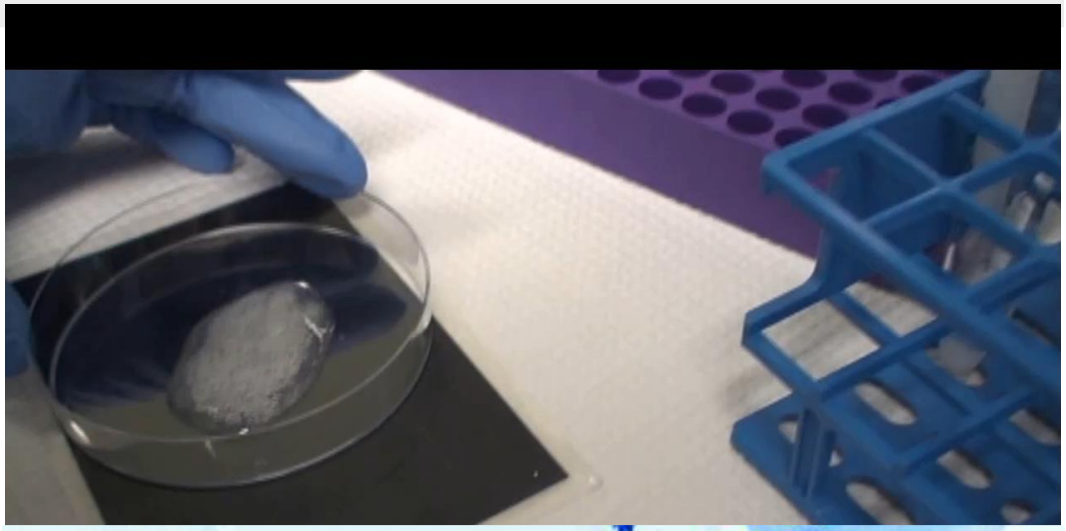
https://clinicaltrials.gov/ct2/show/NCT03791086

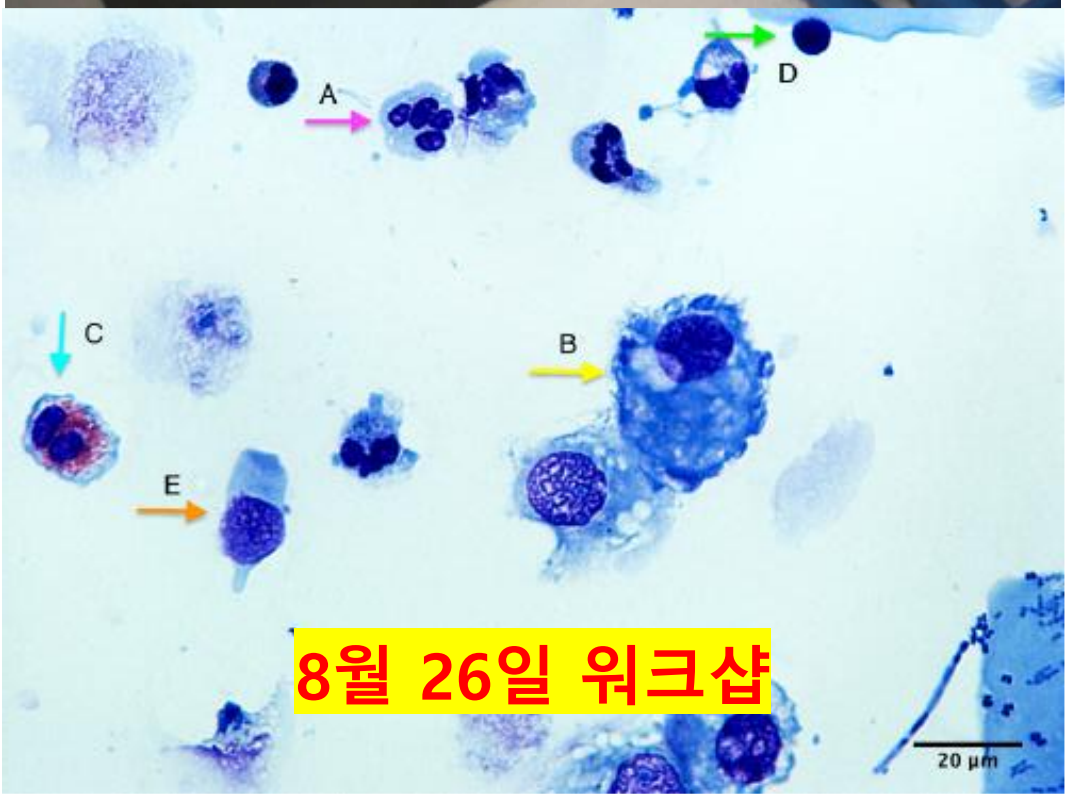


Biomarker-directed personalized treatment (endotype)

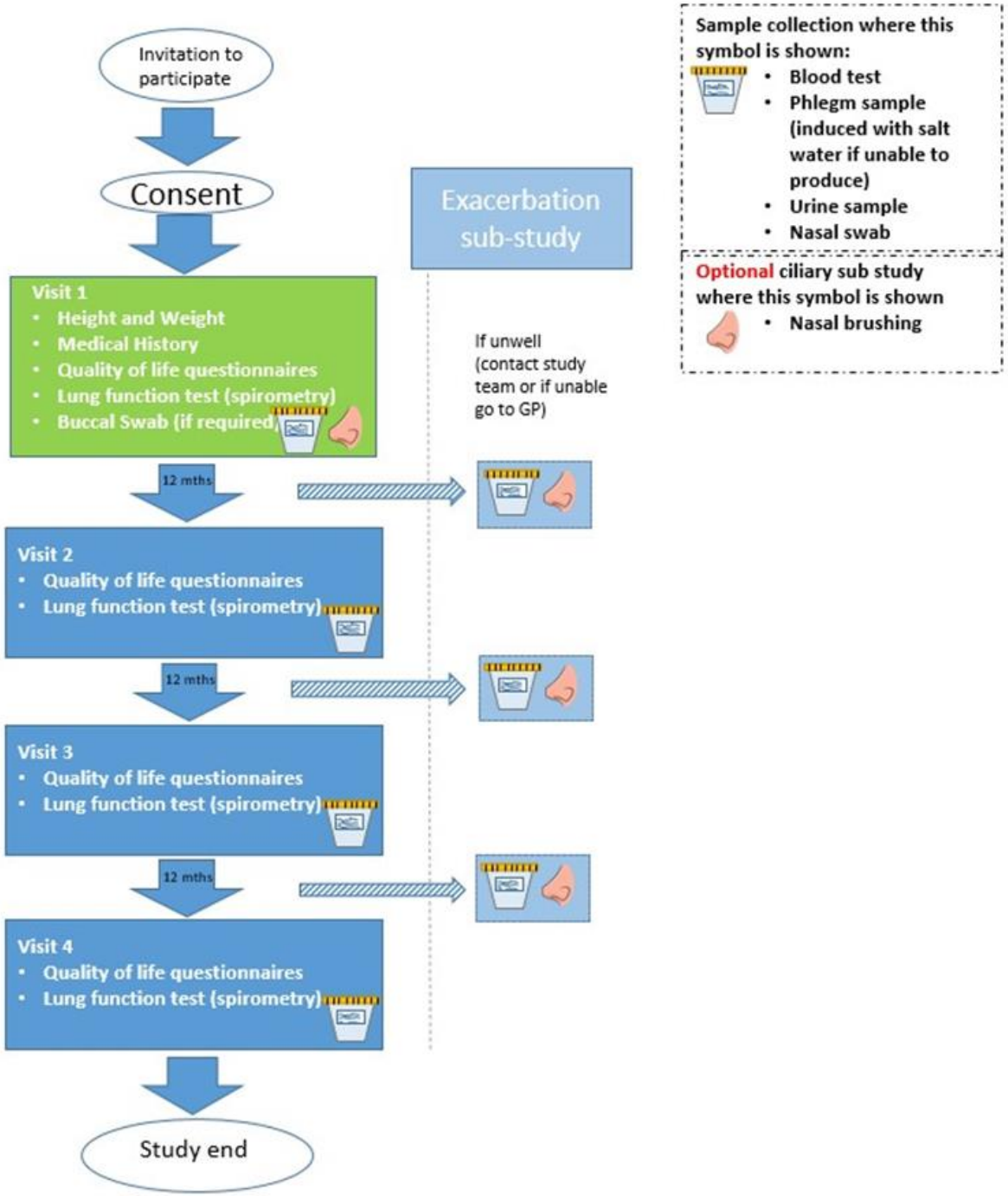
Pembridge and Chalmers Breathe 2021;17:210119

BRIDGE Study flow chart





8월 26일 워크샵



Acknowledgement: KMBARC investigators

감사합니다~~!


6TH
WORLD BRONCHIECTASIS
& NTM CONFERENCE
July 18-20, 2023 | New York, NY


7th
WORLD
BRONCHIECTASIS
CONFERENCE
Dundee
4 - 6 July 2024
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소규모 해외학회 지원 요건과 의무

<지원 요건>

- 위임장
- 지원 업체 선정하여 학회에 연락
  - ✓ 최소 2명이상
- 초록 채택 (1저자, 교신저자)

<지원 받은 후 의무사항>

- 학회 개최 전 2년 이내 TRD 정식출판 논문의 1저자 또는 교신저자
- 지원 받은 초록과 같은 제목과 내용으로 TRD submission

prepared by
The Korean Research-Based Pharmaceutical Industry Association

February 23rd – 25th, 2023

3rd European Bronchiectasis Workshop
The Korean Academy of Tuberculosis and Respiratory Diseases
101-605, 58, Banpo-daero, Seocho-gu, Seoul 06652, Korea

RE: LETTER OF AUTHORIZATION

Dear [The Korean Academy of Tuberculosis and Respiratory Diseases]:

The Organising Committee of the 3rd European Bronchiectasis Workshop and Publi Créations, an association established and existing under the laws of Monaco and having its place of business at 74, bd d'Italie - 98000 MONACO (the "Organizer"), does hereby authorize The Korean Academy of Tuberculosis and Respiratory Diseases ("Designee") to act as herein specified for and on behalf of the Organizer in connection with the conference to be held on February 23rd – 25th, 2023 at Humanitas University in Pieve Emanuele, Milan, Italy ("Conference"):

- To select Korean healthcare professionals ("HCPs") appropriately qualified to serve as speaker, chair or panelist of the Conference to receive sponsorship;
- To sponsor such qualified HCPs by providing reimbursement of reasonable expenses incurred in attending the Conference (e.g., registration fee, travel, lodging, and meals); and
- To prepare, execute and file any and all documents and take any and all actions required pursuant to applicable Korean law and the Code of Conduct adopted by the Korean Research-Based Pharmaceutical Industry Association ("KRPIA") to provide sponsorship for Korean HCPs to attend the Conference.

This letter grants unto the Designee full power and authority to do and perform each and every act whatsoever requisite, necessary and proper to be done in the performance of the above, hereby ratifying and confirming that the Designee shall lawfully do or cause to be done by virtue of this letter unless revoked by the undersigned Organizer by written instrument.

IN WITNESS WHEREOF, the Organizer has caused its duly authorized representative to execute this letter on February 23rd – 25th, 2023.

The Organising Committee of the 3rd European Bronchiectasis Workshop

By: _____

Name: James D. Chalmers

Position: Co-chair

Date: November 1, 2022

경청해 주셔서

감사합니다.

ULSAN
UNIVERSITY
HOSPITAL

Original Article

Pulmonary Infection

Tuberculosis and Respiratory Diseases 2021;84(4):326-332.

Published online: June 24, 2021

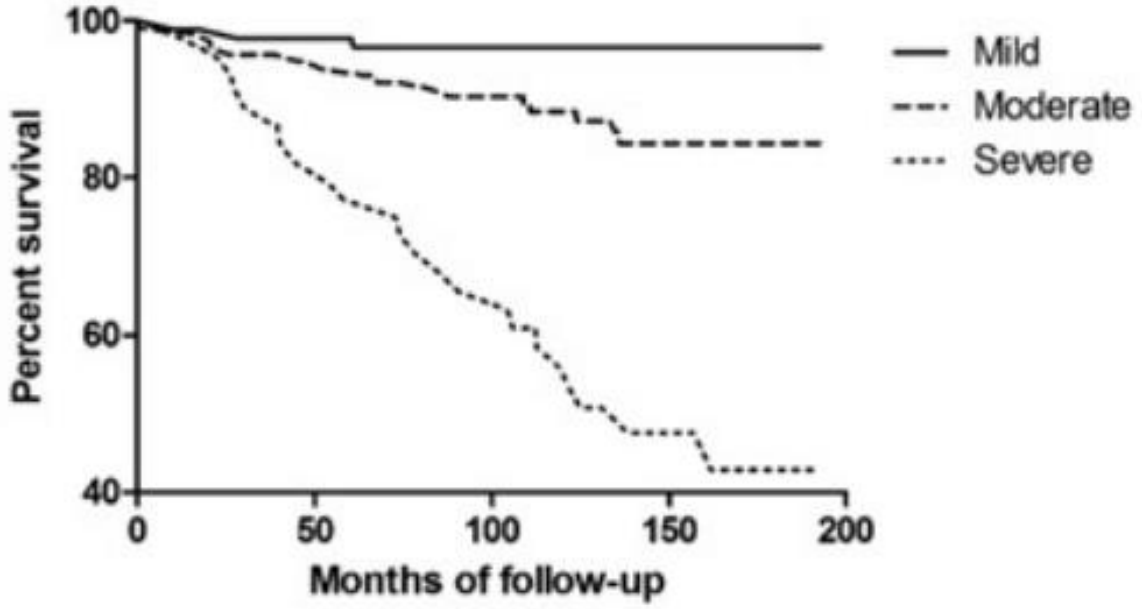
DOI: https://doi.org/10.4046/trd.2021.0029

Differences in Clinical Characteristics of Invasive Tracheobronchial Aspergillosis according to the Presence of Invasive Pulmonary Aspergillosis

Chuiyong Pak, M.D.[1], Woori Jo, M.D.[1], Jin Hyoung Kim, M.D.[1], Jae Uk Im, M.D.[1], Joseph Jeong, M.D., Ph.D.[2], Hee Jeong Cha, M.D., Ph.D.[3], Eun-Young Choi, M.D., Ph.D.[4], Seung Won Ra, M.D., Ph.D.[1]

• Bronchiectasis Severity Index (BSI)

Age
BMI
FEV_1, % predicted
Hospital admission
Exacerbations
MRC dyspnea scale
Pseudomonas colonization
Colonization with other organisms
≥ 3 lobes involved or cystic Bronchiectasis



Martinez-Garcia et al. Chest 2018;154:737
Chalmers et al. Am J Respir Crit Care Med 2014;189:576

• FACED/E-FACED score

Points	FEV_1, %predicted	Age (years)	*P. aeruginosa* colonization	Extension (radiologic severity)	Dyspnea (mMRC dyspnea scale)	At least one severe exacerbation requiring hospitalization in the previous year[a]
0	≥ 50%	< 70	No	1-2 lobes	0-2	No
1			Yes	≥ 3 lobes	≥ 3	
2	< 50	≥ 70				Yes

The FACED index is classified into mild (0-2 points), moderate (3-4 points) and severe (5-7 points). The E-FACED score is classified into mild (0-3 points), moderate (4-6 points) and severe (7-9 points).

FACED, FEV_1, age, colonization, extension, dyspnea; E-FACED, exacerbation-FACED; mMRC, modified medical research council, FEV_1, forced expiratory volume in one second.

[a]Included in E-FACED score only.

Eur Respir J 2014;43:1357-1367

ERS/ATS technical standard on interpretive strategies for routine lung function tests

Eur Respir J 2022; 60: 2101499

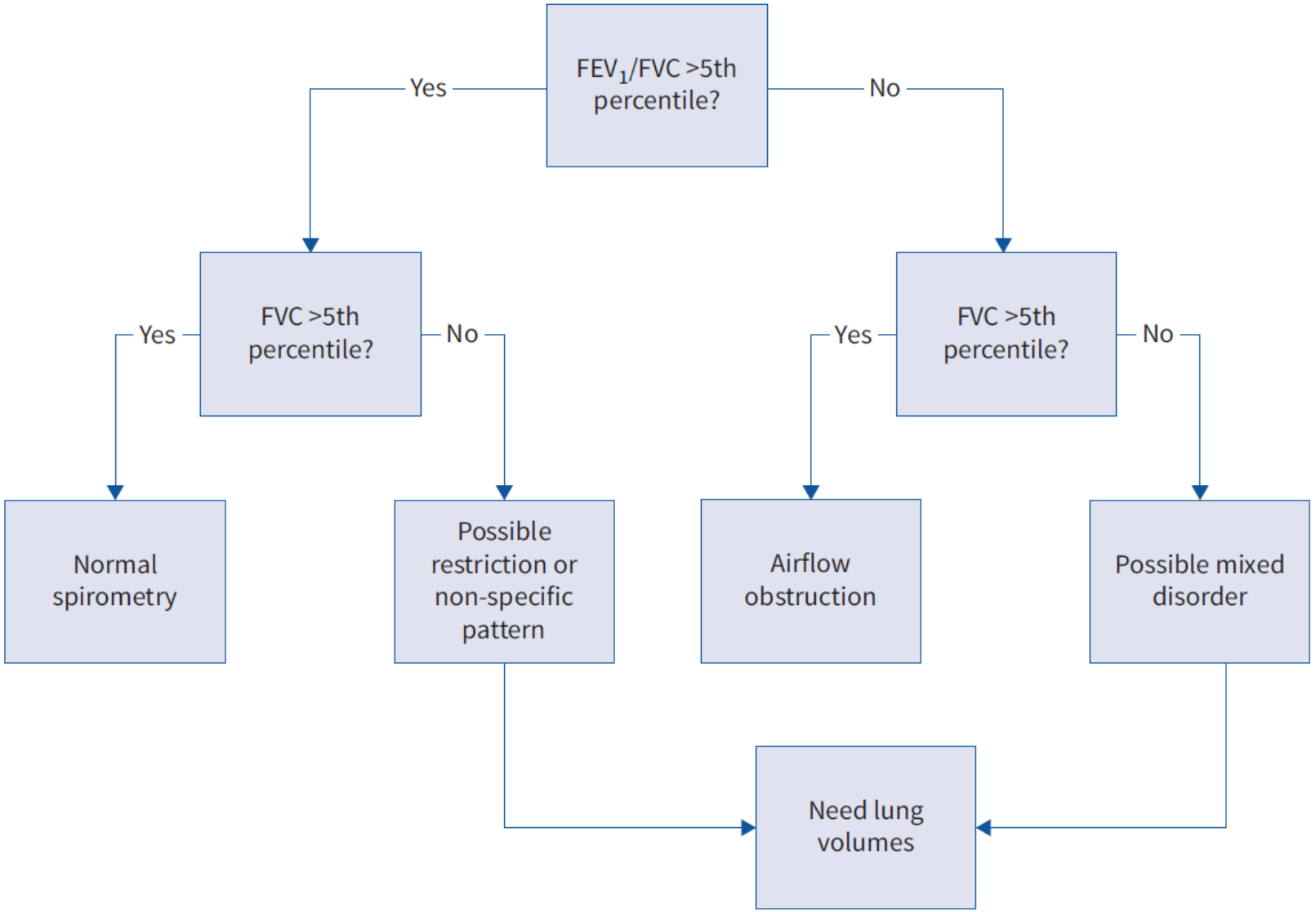


Table 1. Baseline characteristics

Variables	Normal (n = 83)	Obstructive (n = 122)	Restrictive (n = 113)	Mixed (n = 174)	P-value
Age	60.7 ± 11.2	65.9 ± 7.4	63.8 ± 8.3	65.8 ± 8.6	0.121
Age ≥65 yrs	30 (36.1%)	70 (57.4%)	51 (45.1%)	101 (58.0%)	0.002
Male	26 (31.3%)	67 (54.9%)	44 (38.9%)	96 (55.2%)	<0.001
BMI	22.1 ± 2.8	23.5 ± 3.3	23.0 ± 4.1	23.3 ± 3.7	0.001
Current or former smoker	14 (16.9%)	57 (47.1%)	37 (32.7%)	71 (40.8%)	<0.001
Respiratory comorbidities					
Asthma	12 (14.5%)	33 (27.0%)	21 (18.6%)	59 (33.9%)	0.002
Tuberculosis	27 (33.3%)	42 (34.4%)	33 (29.5%)	72 (41.4%)	0.201
NTM PD	11 (13.6%)	11 (9.0%)	9 (8.0%)	17 (9.8%)	0.618
Other Comorbidities					
DM	5 (6.0%)	15 (12.3%)	16 (14.2%)	19 (11.0%)	0.336
CVD	15 (18.1%)	37 (30.3%)	32 (28.3%)	70 (40.2%)	0.003
Liver cirrhosis	1 (1.2%)	0 (0.0%)	4 (3.5%)	3 (1.7%)	0.196
CKD	0 (0.0%)	3 (2.5%)	4 (3.5%)	4 (2.3%)	0.437
Malignancy	7 (8.4%)	11 (9.0%)	10 (8.9%)	15 (8.6%)	0.999
Pseudomonas	11 (23.9%) (n = 46)	13 (20.3%) (n = 64)	20 (30.3%) (n = 66)	28 (32.6%) (n = 86)	0.345
Exacerbation history in the previous year					
Any exacerbation	0.7 ± 1.7	0.6 ± 1.3	0.9 ± 1.7	1.0 ± 1.9	0.314
Severe exacerbation	0.4 ± 1.0	0.3 ± 0.9	0.5 ± 1.1	0.7 ± 1.6	0.117
mMRC	0.8 ± 0.7 (n = 81)	1.1 ± 0.7 (n = 119)	1.0 ± 0.7 (n = 111)	1.5 ± 1.0 (n = 168)	<0.001
Modified Reiff score	4.4 ± 2.6 (n = 81)	6.7 ± 4.5 (n = 122)	6.3 ± 4.1 (n = 111)	7.3 ± 4.2 (n = 174)	<0.001
FACED score	1.0 ± 1.1	2.1 ± 1.5	1.6 ± 1.3	2.8 ± 1.6	0.001
BSI score	4.1 ± 2.3	5.8 ± 2.9	5.7 ± 3.1	7.4 ± 3.9	<0.001

Table 2. Pulmonary function test

Variables	Normal (n = 83)	Obstructive (n = 122)	Restrictive (n = 113)	Mixed (n = 174)	P-value
FEV_1/FVC ratio	78.1 ± 6.5	56.5 ± 10.1	77.7 ± 8.6	56.3 ± 8.8	<0.001
FEV_1 (L)	2.3 ± 0.6	1.7 ± 0.6	1.8 ± 0.5	1.3 ± 0.4	0.001
FEV_1 % predicted	86.9 ± 12.4	63.6 ± 16.2	66.4 ± 15.0	48.2 ± 12.8	0.004
FVC (L)	3.0 ± 0.8	3.0 ± 0.8	2.3 ± 0.7	2.3 ± 0.7	0.280
FVC % predicted	86.4 ± 12.1	81.6 ± 14.6	64.5 ± 11.9	62.9 ± 11.8	0.179
TLC (L)	5.0 ± 1.4 (n = 35)	5.2 ± 1.1 (n = 69)	3.5 ± 0.6 (n = 10)	4.0 ± 0.9 (n = 15)	0.045
TLC % predicted	100.6 ± 28.2 (n = 35)	97.5 ± 12.9 (n = 69)	69.3 ± 6.1 (n = 10)	69.6 ± 9.8 (n = 15)	0.061
DLCO	15.5 ± 5.3 (n = 39)	14.2 ± 4.9 (n = 75)	12.5 ± 3.7 (n = 22)	13.5 ± 5.2 (n = 46)	0.448
DLCO % predicted	79.4 ± 21.9 (n = 39)	74.6 ± 20.4 (n = 75)	70.2 ± 19.1 (n = 22)	67.0 ± 22.3 (n = 46)	0.047

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Exacerbation rate according to ventilatory disorder

Ventilatory disorder	Any exacerbation rate per person-year (95% CI)	*Exacerbation rate ratio (95% CI)
Total (n=492)	0.84 (0.76-0.92)	*P for trend = 0.072
Normal pattern	0.73 (0.57-0.94)	Reference
Obstructive pattern	0.64 (0.51-0.80)	0.850 (0.600-1.205)
Restrictive pattern	0.87 (0.71-1.06)	1.140 (0.815-1.593)
Mixed pattern	**1.00 (0.86-1.16)**	**1.391 (1.026-1.886)**
	Any exacerbation rate per person-year (95% CI)	***Exacerbation rate ratio (95% CI)**
Total (n=492)	0.20 (0.17-0.25)	*P for trend < 0.001
Normal pattern	0.06 (0.03-0.14)	Reference
Obstructive pattern	0.08 (0.04-0.15)	1.536 (0.473-4.988)
Restrictive pattern	0.15 (0.09-0.24)	2.832 (0.940-8.534)
Mixed pattern	**0.39 (0.30-0.49)**	**7.903 (2.874-21.734)**

*Negative binomial regression analysis was adjusted for age, sex, BMI, mMRC dyspnoea score, severity scores, comorbidities, and number of exacerbations assessed at baseline.

Summary