해외 코호트 연구와 특성 비교

한양대학교 의과대학
호흡기알레르기내과
이현

Contents

- **Nationwide bronchiectasis cohort**
  - EMBARC, EMBARC-India, BronchUK, RISBON, ABR, BRR, KMBARC
- **Heterogeneity of Bronchiectasis**
- **Comparison of clinical characteristics of bronchiectasis**
  - Korea/Europe/India/Australia
- **Summary**

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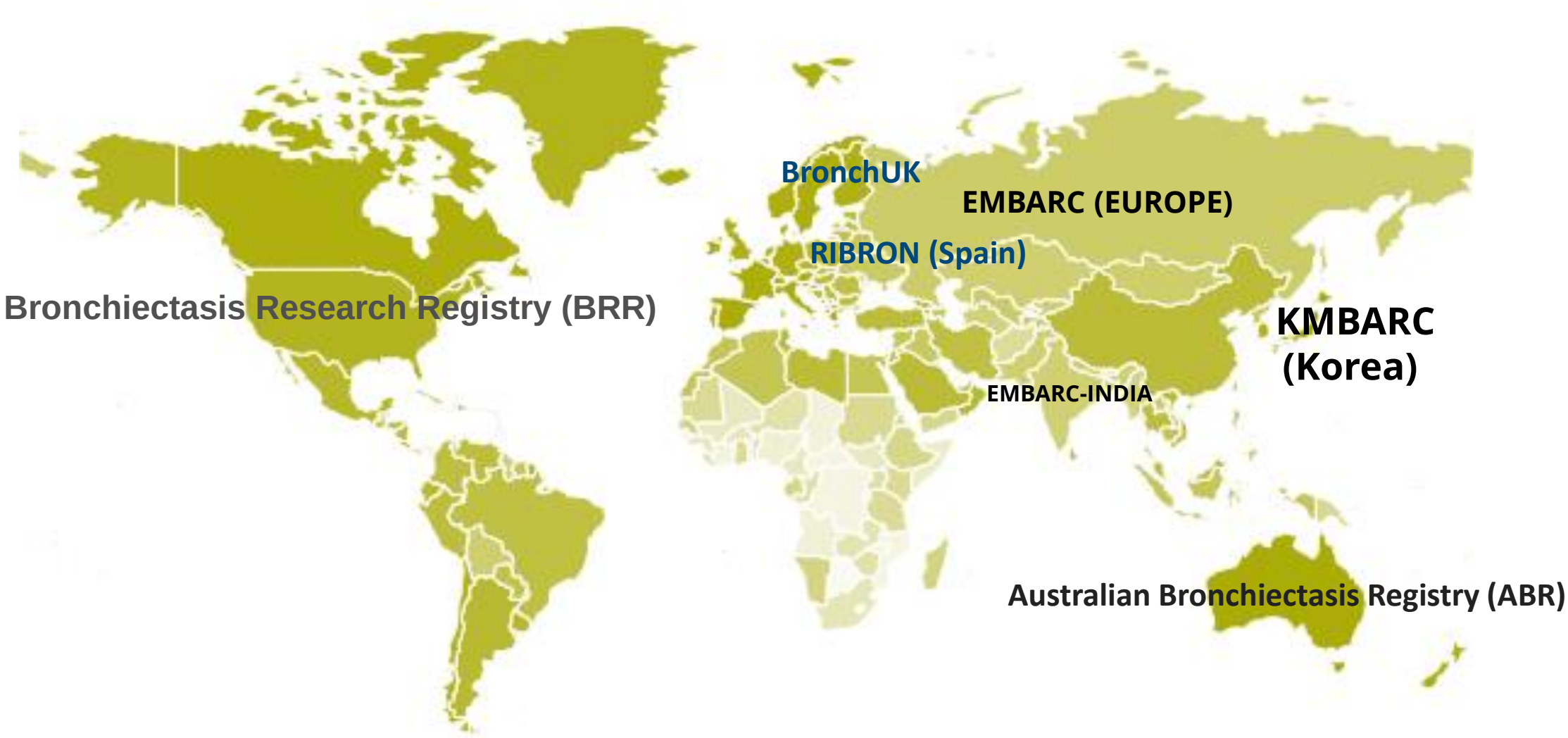
Nationwide bronchiectasis cohort



EMBARC - homepage

https://www.bronchiectasis.eu/

EMBARC – study protocol

STUDY PROTOCOL
BRONCHIECTASIS

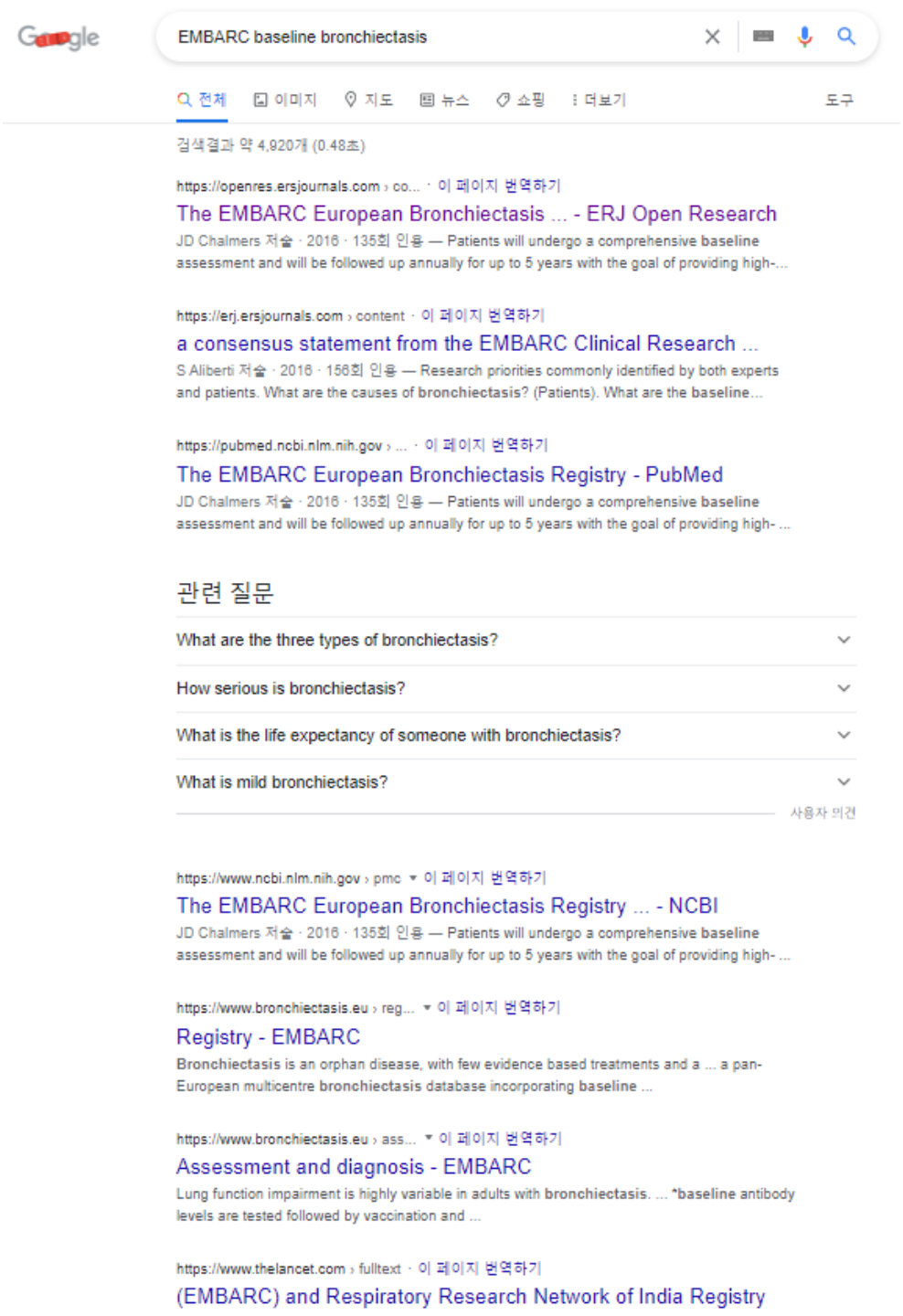
The EMBARC European Bronchiectasis Registry: protocol for an international observational study

James D. Chalmers[1,33], Stefano Aliberti[2,33], Eva Polverino[3,33], Montserrat Vendrell[4], Megan Crichton[1], Michael Loebinger[5], Katerina Dimakou[6], Ian Clifton[7], Menno van der Eerden[8], Gernot Rohde[9], Marlene Murris-Espin[10], Sarah Masefield[11], Eleanor Gerada[12], Michal Shteinberg[13], Felix Ringshausen[14], Charles Haworth[15], Wim Boersma[16], Jessica Rademacher[14], Adam T. Hill[17], Timothy Aksamit[18], Anne O'Donnell[19], Lucy Morgan[20], Branislava Milenkovic[21,22], Leandro Tramma[1], Joao Neves[23], Rosario Menendez[24], Perluigi Paggiaro[25], Victor Botnaru[26], Sabina Skrgat[27], Robert Wilson[5], Pieter Goeminne[28], Anthony De Soyza[29,30], Tobias Welte[14], Antoni Torres[3], J. Stuart Elborn[31] and Francesco Blasi[32], on behalf of EMBARC.

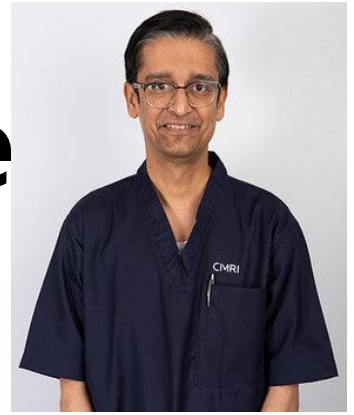
ERJ Open Research 2016 2: 00081-2015

EMBARC - baseline

EMBARC baseline은 없나요?



EMBARC/EMBARC-India baseline



ORIGINAL ARTICLE
BRONCHIECTASIS

The independent contribution of *Pseudomonas aeruginosa* infection to long-term clinical outcomes in bronchiectasis

David Araújo[1], Michal Shteinberg[2], Stefano Aliberti[3,4], Pieter C. Goeminne[5,6], Adam T. Hill[7], Thomas C. Fardon[8], Dusanka Obradovic[9], Glenda Stone[10], Marion Trautmann[10], Angela Davis[10], Katerina Dimakou[11], Eva Polverino[12], Anthony De Soyza[13,14], Melissa J. McDonnell[14,15] and James D. Chalmers[8]

@ERSpublications
Frequent exacerbations are the key determinants of long-term outcome in patients with chronic *Pseudomonas aeruginosa* infection http://ow.ly/WjPZ30h67rL

Cite this article as: Araújo D, Shteinberg M, Aliberti S, *et al*. The independent contribution of *Pseudomonas aeruginosa* infection to long-term clinical outcomes in bronchiectasis. *Eur Respir J* 2018; 51: 1701953 [https://doi.org/10.1183/13993003.01953-2017].

N = 2596

Bronchiectasis in India: results from the European Multicentre Bronchiectasis Audit and Research Collaboration (EMBARC) and Respiratory Research Network of India Registry

Raja Dhar, Sheetu Singh, Deepak Talwar, Murali Mohan, Surya Kant Tripathi, Rajesh Swarnakar, Sonali Trivedi, Srinivas Rajagopala, George D'Souza, Arjun Padmanabhan, Archana Baburao, Padukudru Anand Mahesh, Babaji Ghewade, Girija Nair, Aditya Jindal, Gayathri Devi H Jayadevappa, Honney Sawhney, Kripesh Ranjan Sarmah, Kaushik Saha, Suresh Anantharaj, Arjun Khanna, Samir Gami, Arti Shah, Arpan Shah, Naveen Dutt, Himanshu Garg, Sunil Vyas, Kummannoor Venugopal, Rajendra Prasad, Naveed M Aleemuddin, Saurabh Karmakar, Virendra Singh, Surinder Kumar Jindal, Shubham Sharma, Deepak Prajapat, Sagar Chandrashekaria, Melissa J McDonnell, Aditi Mishra, Robert Rutherford, Ramanathan Palaniappan Ramanathan, Pieter C Goeminne, Preethi Vasudev, Katerina Dimakou, Megan L Crichton, Biiligere Siddaiah Jayaraj, Rahul Kungwani, Akanksha Das, Mehneet Sawhney, Eva Polverino, Antoni Torres, Nayan Sri Gulecha, Michal Shteinberg, Anthony De Soyza, Anshul Mangala, Palak Shah, Nishant Kumar Chauhan, Nikita Jajodia, Ashutosh Singhal, Sakshi Batra, Ashfaq Hasan, Sneha Limaye, Sundeep Salvi, Stefano Aliberti, James D Chalmers

N = 2596 (European) / N = 2596 (Indian)

Eur Respir J 2018; 51: 1701953
Lancet Glob Health 2019; 7: e1269–79

BronchUK

BRONCH-UK The UK bronchiectasis network and biobank

MRC Medical Research Council

Home | What is BRONCH-UK? | NEWS | Registry | Research | For patients | Contact us

BRONCH-UK is a multidisciplinary collaboration between more than 9 UK universities and brings together basic scientists and clinicians with an integrated programme of translational research for bronchiectasis

The United Kingdom Bronchiectasis Registry (BRONCH-UK) is a national research database and biobank of adults with bronchiectasis.

The aim is to facilitate clinical trials and academic research studies in order to improve our understanding of what causes bronchiectasis and to find better, more effective treatment for people with this condition.

The project is an initiative of the Bronchiectasis Research Academic network (BRAN) and funded by the Medical Research Council.

BRAN is a national network of doctors, allied healthcare professionals and scientists across the UK with the aims to promote good clinical care and facilitate research and communication among clinicians and researchers in Bronchiectasis.

Members of BRAN have worked on several single centre and national multi-centre clinical studies and developed the Bronchiectasis severity index (BSI)

a national research database and **biobank** of adults with bronchiectasis

BRONCH-UK
The National Bronchiectasis Network

https://www.bronch.ac.uk/

BronchUK - members

1. Dr A De Soyza (Newcastle)
2. Dr A Hill (Edinburgh)
3. Dr A Sullivan (Birmingham)
4. Prof J Brown & Dr J Hurst (UCL, London)
5. Prof S Elborn & Prof J Bradley (Belfast)
6. Dr M Loebinger (Brompton, London)
7. Dr C Haworth & Dr A Floto (Papworth, Cambridge)
8. Dr T Wilkinson & Dr Mary Carroll (Southampton)
9. Dr J Duckers (Llandough)
10. Dr James Chalmers - affiliated member (Dundee University) - Link with European Bronchiectasis Registry (EMBARC)

https://www.bronch.ac.uk/

BronchUK – study protocol

STUDY PROTOCOL
BRONCHUK

BronchUK: protocol for an observational cohort study and biobank in bronchiectasis

Anthony De Soyza[1], Philip Mawson[2], Adam T. Hill[3], Stuart Elborn[4], Judy M. Bradley[4], Charles S. Haworth[5,6], R. Andres Floto[5,6], Robert Wilson[7], Michael R. Loebinger[7], Mary Carroll[8], Megan Crichton[9], James D. Chalmers[9], Anita Sullivan[10], Jeremy Brown[11], John R. Hurst[11], Jamie Duckers[12], Martin Kelly[13], John Steer[14], Tim Gatheral[15], Paul P. Walker[16], Craig Winstanley[17], Alistair McGuire[18], David Denning[19] and Richard McNally[2]

ERJ Open Res 2021; 7: 00775-2020

RISBON – study protocol/baseline

Sociedad Española de Neumología y Cirugía Torácica SEPAR

ARCHIVOS DE Bronconeumología

www.archbronconeumol.org

Original Article

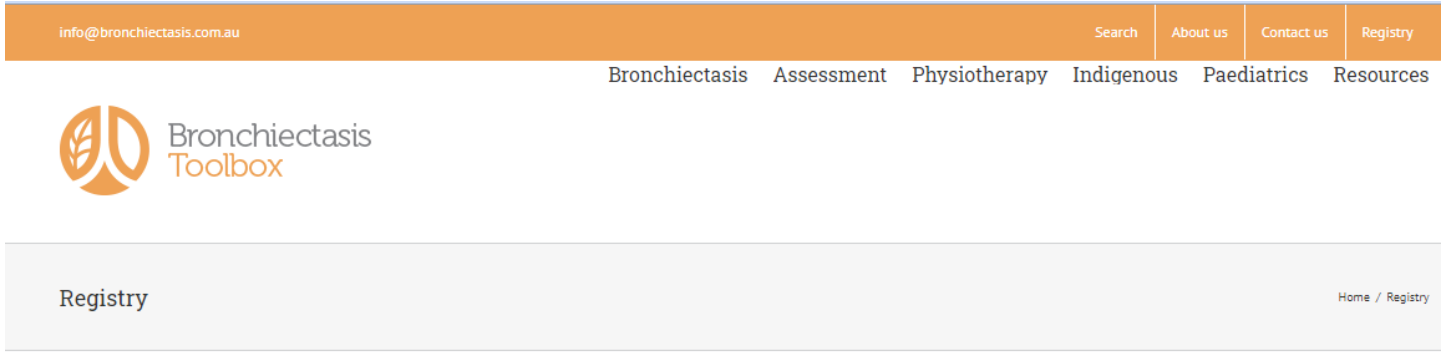
RIBRON: The Spanish online bronchiectasis registry. Characterization of the first 1912 patients☆

Miguel Angel Martinez-García,[a,*] Carmen Villa,[b] Yadira Dobarganes,[b] Rosa Girón,[c] Luis Maíz,[d] Marta García-Clemente,[e] Oriol Sibila,[f] Rafael Golpe,[g] Juan Rodríguez,[h] Esther Barreiro,[i] Juan Luis Rodriguez,[j] Rosario Menéndez,[a] Concepción Prados,[k] David de la Rosa,[l] y Casilda Olveira[m], en representación del Grupo Español del Registro de Bronquiectasias (RIBRON)[1]

[a] Servicio de Neumología, Hospital Universitario y Politécnico La Fe, Valencia, España
[b] Servicio de Neumología, Clínica Fuensanta, Madrid, España
[c] Servicio de Neumología, Instituto de Investigación Sanitaria, Hospital Universitario de la Princesa, España
[d] Servicio de Neumología, Hospital Ramón y Cajal, Madrid, España
[e] Servicio de Neumología, Hospital Universitario Central de Asturias, Oviedo, Asturias, España
[f] Servicio de Neumología, Hospital Clínico, Barcelona, España
[g] Servicio de Neumología, Hospital Lucus Augusti, Lugo, España
[h] Servicio de Neumología, Hospital San Agustín, Avilés, Asturias, España
[i] Servicio de Neumología, Hospital del Mar-IMIM, UPF, CIBERES, Barcelona, España
[j] Servicio de Neumología, Hospital San Carlos, Madrid, España
[k] Servicio de Neumología, Hospital La Paz, Madrid, España
[l] Servicio de Neumología, Hospital Santa Creu i Sant Pau, Barcelona, España
[m] Servicio de Neumología, Hospital Regional Universitario de Málaga, Instituto de Investigación Biomédica de Málaga (IBIMA)/Universidad de Málaga, Málaga, España

Arch Bronconeumol. 2021;57:28-35

ABR - homepage



https://bronchiectasis.com.au/registry

State or Territory	Participating Site	Principal Investigator
New South Wales	Concord Repatriation General Hospital	A/Prof Lucy Morgan
	Wyong Hospital	Dr Cameron Hunter
	Westmead Hospital	A/Prof Peter Middleton
	Royal Prince Alfred Hospital	Prof Peter Bye
	Sydney Children's Hospital	Dr Louisa Owens
	Westmead Children's Hospital	Dr Paul Robinson
Queensland	Queensland Children's Hospital	Prof Anne Chang
	Greenslopes Hospital	A/Prof Rachel Thomson
	Mater Health Services	Dr Lucy Burr
	The Prince Charles Hospital	Dr Daniel Smith
Victoria	Monash Medical Centre	Dr Paul King
	The Royal Melbourne Hospital	Dr Megan Rees
	Western Health	A/Prof Lata Jayaram
	The Royal Children's Hospital	Dr Danielle Wurzel
South Australia	Royal Adelaide Hospital	Dr Chien Li Homes-Liew
	The Queen Elizabeth Hospital and (APY) Lands	Dr Antony Veale
Western Australia	Royal Perth Hospital	Prof Grant Waterer
	Perth Children's Hospital	Dr André Schultz
	Sir Charles Gairdner Hospital	Dr Anna Tai
Northern Territory	Alice Springs Hospital	Prof Graeme Maguire
	Royal Darwin Hospital	Prof Anne Chang

ABR – protocol/baseline

Respiratory Medicine 155 (2019) 97–103

Contents lists available at ScienceDirect

Respiratory Medicine

journal homepage: www.elsevier.com/locate/rmed

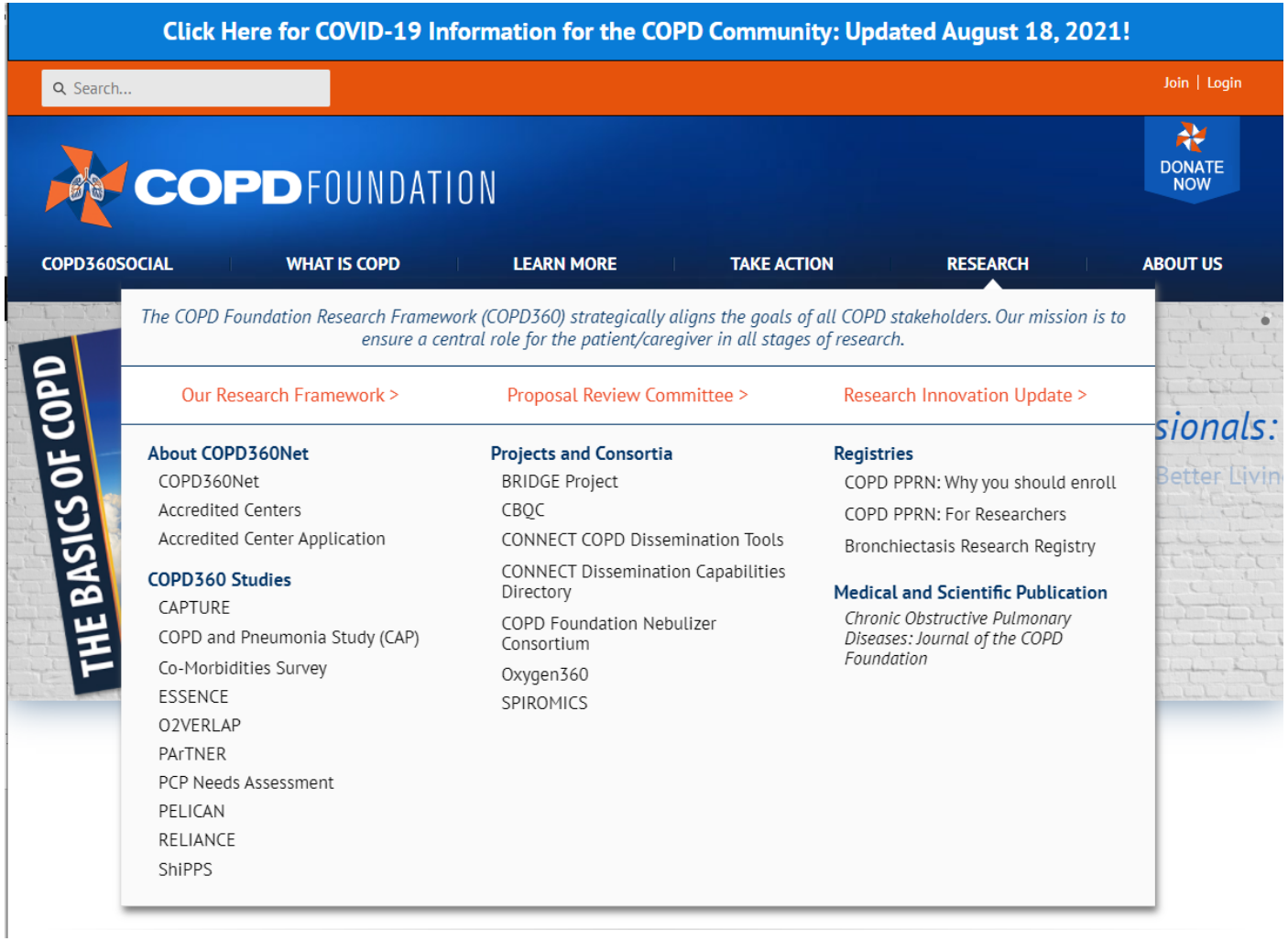
Australian adults with bronchiectasis: The first report from the Australian Bronchiectasis Registry N = 799

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]

[a] Central Clinical School Faculty of Medicine and Health, The University of Sydney, Sydney NSW 2006 and Department of Respiratory Medicine, Royal Prince Alfred Hospital, Camperdown, NSW, 2050, Australia
[b] Department of Respiratory and Sleep Medicine, Mater Health, South Brisbane, QLD and Mater Research, University of Queensland, QLD, Australia
[c] Department of Respiratory and Sleep Medicine, Queensland Children's Hospital, Queensland University of Technology, Brisbane, Australia and Child Health Division, Menzies School of Health Research, Charles Darwin University, Darwin, Northern Territory, Australia
[d] Department of Thoracic Medicine, Royal Adelaide Hospital, South Australia, University of Adelaide, South Australia, Australia
[e] Monash Respiratory and Sleep Medicine, Monash Medical Centre, Melbourne, VIC, Australia
[f] Department of Respiratory Medicine, Westmead Hospital, Westmead, NSW, 2145, Australia
[g] Western Clinical School, University of Melbourne, Melbourne Australia 3021 and General Internal Medicine, Western Health, Melbourne Australia, 3011, Australia
[h] The Prince Charles Hospital – Thoracic Medicine, Brisbane, Australia. QIMR Berghofer Medical Research Institute – Lung Inflammation and Infection Laboratory, Herston, Australia
[i] Department of Respiratory Medicine, Greenslopes Private Hospital, Greenslopes, QLD, 4120, Australia
[j] Lung Foundation Australia, Milton, QLD, Australia
[k] Centenary Institute, The University of Sydney, Sydney, NSW, 2006, Australia
[l] Concord Clinical School, Faculty of Medicine and Health, University of Sydney, Sydney NSW 2006 and Department of Respiratory Medicine, Concord General Repatriation Hospital, Concord, NSW, 2137, Australia

Respiratory Medicine 155 (2019) 97–103

BRR – homepage



BRR – protocol/baseline

[Original Research **Bronchiectasis**]

CHEST

Adult Patients With Bronchiectasis
A First Look at the US Bronchiectasis Research Registry

Timothy R. Aksamit, MD; Anne E. O'Donnell, MD; Alan Barker, MD; Kenneth N. Olivier, MD; Kevin L. Winthrop, MD; M. Leigh Anne Daniels, MD, MPH; Margaret Johnson, MD; Edward Eden, MD; David Griffith, MD; Michael Knowles, MD; Mark Metersky, MD; Matthias Salathe, MD; Byron Thomashow, MD; Gregory Tino, MD; Gerard Turino, MD; Betsy Carretta, MPH; and Charles L. Daley, MD; for the Bronchiectasis Research Registry Consortium

NTM-PD (63.4%)

OBJECTIVES: We sought to describe the characteristics of adult patients with bronchiectasis enrolled in the US Bronchiectasis Research Registry (BRR).

METHODS: The BRR is a database of patients with non-cystic-fibrosis bronchiectasis (NCFB) enrolled at 13 sites in the United States. Baseline demographic, spirometric, imaging, microbiological, and therapeutic data were entered into a central Internet-based database. Patients were subsequently analyzed by the presence of NTM.

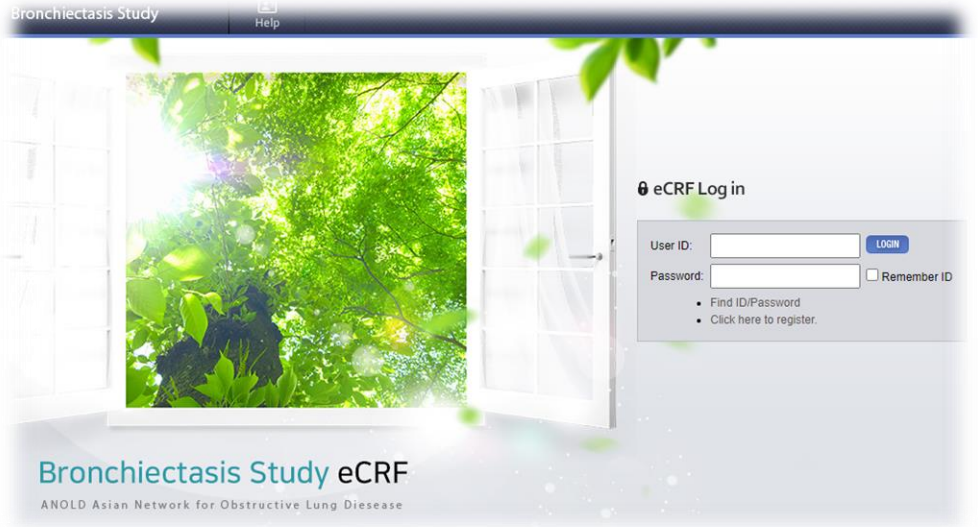
RESULTS: We enrolled 1,826 patients between 2008 and 2014. Patients were predominantly women (79%), white (89%), and never smokers (60%), with a mean age of 64 ± 14 years. Sixty-three percent of the patients had a history of NTM disease or NTM isolated at baseline evaluation for entry into the BRR. Patients with NTM were older, predominantly women, and had bronchiectasis diagnosed at a later age than those without NTM. Gastroesophageal reflux disease (GERD) was more common in those with NTM, whereas asthma, primary immunodeficiency, and primary ciliary dyskinesia were more common in those without NTM. Fifty-one percent of patients had spirometric evidence of airflow obstruction. Patients with NTM were more likely to have diffusely dilated airways and tree-in-bud abnormalities. *Pseudomonas* and *Staphylococcus aureus* isolates were cultured less commonly in patients with NTM. Bronchial hygiene measures were used more often in those with NTM, whereas antibiotics used for exacerbations, rotating oral antibiotics, steroid use, and inhaled bronchodilators were more commonly used in those without NTM.

CONCLUSIONS: Adult patients with bronchiectasis enrolled in the US BRR are described, with differences noted in demographic, radiographic, microbiological, and treatment variables based on stratification of the presence of NTM. CHEST 2017; 151(5):982-992

CHEST 2017; 151(5):982-992

KMBARC - eCRF

- Korean Multicenter Bronchiectasis Audit and Research Collaboration (**KMBARC**)
  - Prospective observational cohort study
  - Ongoing registry since 2018



KMBARC – study protocol

Open access Protocol

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

Strengths and limitations of this study

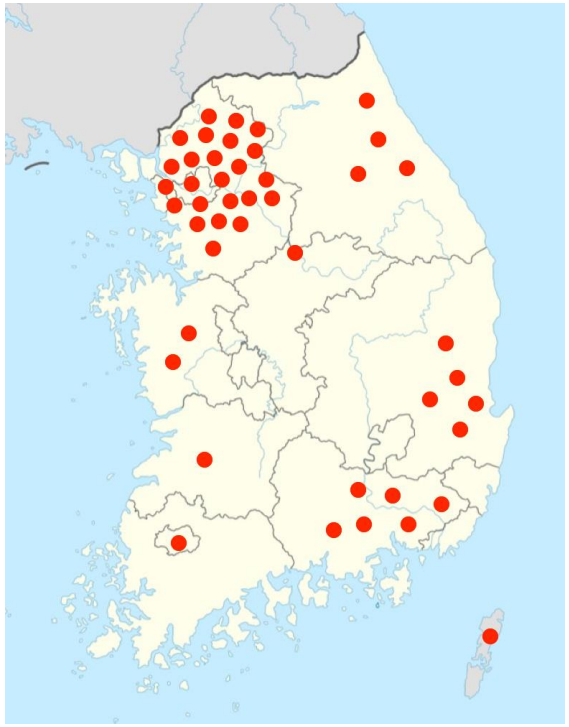
- ► This is the first prospective cohort study on patients with bronchiectasis in Korea.
- ► We will recruit and follow-up patients with bronchiectasis annually using a standardised protocol to improve the quality of data collection.
- ► Sharing similar case-reporting forms with European Multicentre 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.

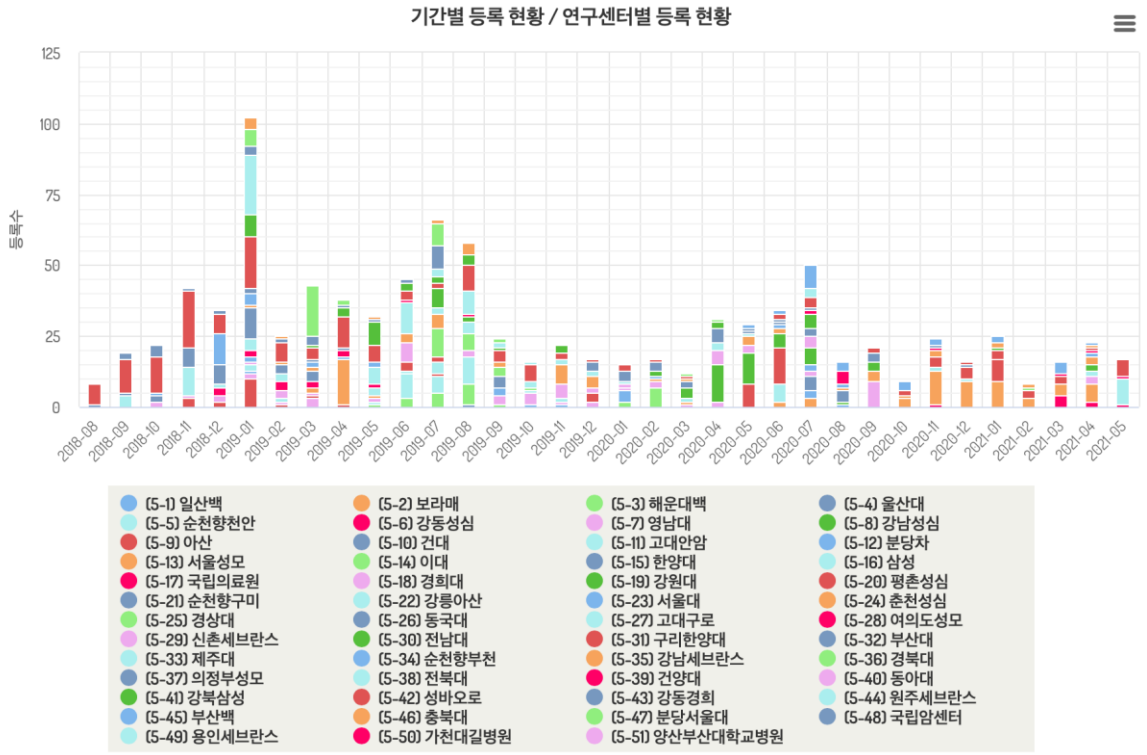
BMJ Open 2020;10:e034090

Modified from Dr. Choi's slide

Current status of KMBARC

- **976** patients from **50** institutions (May 2021)
  - 22 tertiary and 28 secondary hospitals





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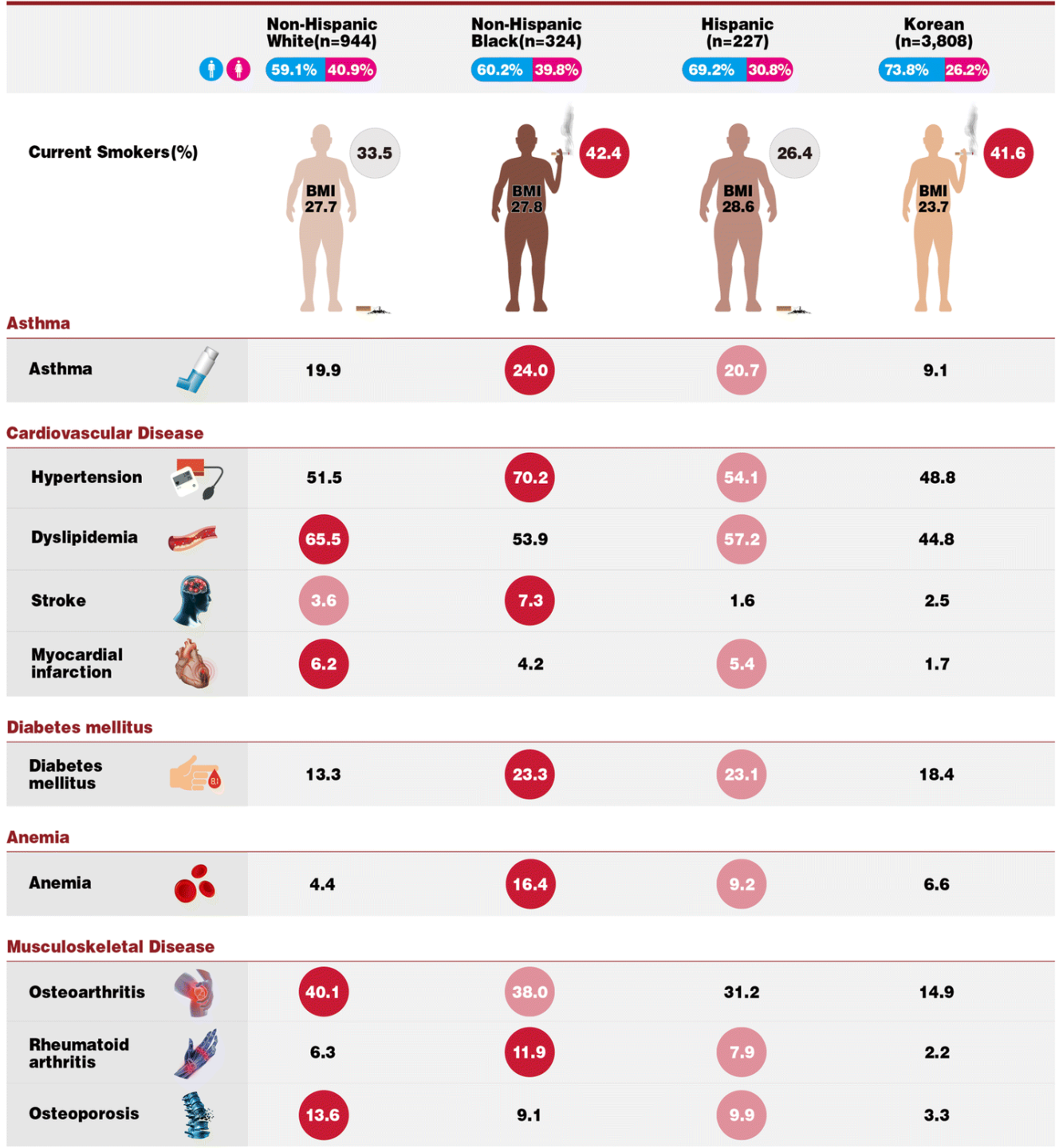
Heterogeneity of COPD



BMC Medicine (2018) 16:178

Table 1 Characteristics of subjects in seven Asian countries

	Total	Beijing, China	Sapporo, Japan	Seoul, Korea	Penang, Malaysia	Quezon, Philippines	Colombo, Sri Lanka	Taipei, Taiwan
Subjects, number	922* (100%)	70	268	173	92	109	110	100
Mean age, years (SD)	68.2 (8.5)	68.9 (7.1)	69.4 (8.1)	69.0 (7.4)	68.3 (8.8)	64.1 (8.8)	63.8 (8.1)	72.3 (8.4)
Male	864 (93.7%)	69 (98.6%)	252 (94.0%)	164 (94.8%)	83 (90.2%)	100 (91.7%)	103 (93.6%)	93 (93.0%)
Cigarette smoker	879 (95.3%)	68 (97.1%)	267 (99.6%)	170 (98.3%)	92 (100%)	100 (91.7%)	89 (80.9%)	93 (93.0%)
Biomass exposure	296 (32.1%)	41 (58.6%)	0 (0%)	89 (51.4%)	13 (14.1%)	106 (97.2%)	34 (30.9%)	13 (13.0%)
Dusty job	412 (44.7%)	31 (44.3%)	63 (23.5%)	80 (46.2%)	42 (45.7%)	94 (86.2%)	58 (52.7%)	44 (44.0%)
Cough	457 (49.6%)	32 (45.7%)	46 (17.2%)	103 (59.5%)	60 (65.2%)	90 (82.6%)	98 (89.1%)	28 (28.0%)
Phlegm	540 (58.6%)	51 (72.9%)	68 (25.4%)	142 (82.1%)	82 (89.1%)	92 (84.4%)	77 (70.0%)	28 (28.0%)
Chronic bronchitis	201 (21.8%)	16 (22.9%)	28 (10.4%)	59 (34.3%)	18 (19.6%)	30 (27.5%)	29 (26.4%)	21 (21.0%)
Wheeze	693 (75.2%)	63 (90.0%)	171 (63.8%)	112 (64.7%)	74 (80.4%)	96 (88.1%)	102 (92.7%)	75 (75.0%)
MMRC dyspnea								
Grade 0	118 (12.8%)	16 (22.9%)	44 (16.4%)	31 (17.9%)	7 (7.6%)	0 (0%)	5 (4.5%)	15 (15.2%)
Grade 1	197 (21.4%)	14 (20.0%)	78 (29.1%)	54 (31.2%)	18 (19.6%)	0 (0%)	18 (16.4%)	15 (15.2%)
Grade 2	299 (32.4%)	27 (38.6%)	138 (51.5%)	48 (27.7%)	7 (7.6%)	0 (0%)	47 (42.7%)	32 (32.3%)
Grade 3	243 (26.4%)	6 (8.6%)	6 (2.2%)	26 (15.0%)	50 (54.3%)	107 (98.2%)	25 (22.7%)	23 (23.2%)
Grade 4	64 (6.9%)	7 (10.0%)	2 (0.7%)	14 (8.1%)	10 (10.9%)	2 (1.8%)	15 (13.6%)	14 (14.1%)
Body mass index, kg/m^2 (SD)	22.1 (4.2)	24.0 (3.9)	22.3 (3.2)	23.0 (3.3)	21.1 (3.7)	20.8 (5.6)	20.0 (4.0)	23.8 (5.0)
Underweight	179 (19.4%)	7 (10.1%)	37 (13.8%)	17 (9.8%)	23 (25.0%)	35 (32.1%)	52 (47.3%)	8 (8.0%)
Overweight	189 (20.5%)	30 (42.9%)	49 (18.3%)	42 (24.3%)	13 (14.1%)	12 (11.0%)	11 (9.1%)	32 (32.0%)
Post-bronchodilator FEV_1, liters (SD)	1.38 (0.61)	1.25 (0.36)	1.72 (0.67)	1.64 (0.56)	1.01 (0.41)	1.09 (0.47)	1.12 (0.35)	1.03 (0.45)
Post-bronchodilator FEV_1, % predicted (SD)	54.7% (20.0)	47.2% (14.1)	63.4% (21.2)	56.4% (17.2)	47.3% (18.7)	50.2% (19.5)	52.3% (16.6)	47.9% (21.0)
GOLD								
Stage I†	115 (12.5%)	1 (1.4%)	62 (23.1%)	16 (9.2%)	7 (7.6%)	12 (11.0%)	9 (8.2%)	8 (8.1%)
Stage II†	392 (42.5%)	29 (41.4%)	126 (47.0%)	92 (53.2%)	30 (32.6%)	39 (35.8%)	46 (40.0%)	30 (30.0%)
Stage III†	324 (35.1%)	32 (45.7%)	67 (25.0%)	55 (31.8%)	40 (43.5%)	43 (39.4%)	46 (43.6%)	41 (41.4%)
Stage IV†	86 (9.3%)	8 (11.4%)	13 (4.9%)	10 (5.8%)	15 (16.3%)	15 (13.8%)	9 (8.2%)	16 (16.2%)
SGRQ								
Symptoms score	50.5	41.3	53.5	45.4	55.1	51.0	62.0	40.2
Activity score	50.4	37.5	44.0	49.0	60.3	67.9	56	44.2
Impact score	26.1	22.1	22.8	23.3	26.9	35.2	35.8	20.9
Total score (SD)	37.5 (18.6)	29.8 (16.0)	34.5 (16.7)	34.8 (18.0)	41.5 (20.3)	47.8 (15.0)	46.1 (19.5)	31.2 (19.2)

Notes: *Number of subjects with percentages in parentheses, if not specified otherwise. Underweight = body mass index $< 18.5\ kg/m^2$; overweight $\geq 25\ kg/m^2$. The Chi-square or Kruskal–Wallis test was performed for the evaluation of variation in the above characteristics among the seven Asian cities (Beijing, China; Colombo, Sri Lanka; Penang, Malaysia; Quezon City, Philippines; Sapporo, Japan; Seoul, Korea; and Taipei, Taiwan) ($P < 0.001$ for all comparisons among the cities).

Abbreviations: SD, standard deviation; MMRC, modified Medical Research Council; FEV_1, forced expiratory volume in 1 second; GOLD, Global Initiative for Chronic Obstructive Lung Disease; SGRQ, St George's Respiratory Questionnaire.

Table 2. Adjusted prevalence ratios and 95% confidence intervals of clinical characteristics in all patients.

	COPDGene cohort		KOCOSS cohort
	NHW	AA	Koreans
		PR (95% CI)	PR (95% CI)
Age ⩾65 years	*Reference*	0.61 (0.54, 0.68)	1.42 (1.34, 1.50)
Sex, male	*Reference*	0.98 (0.91, 1.04)	1.77 (1.71, 1.83)
Smoking status, current	*Reference*	1.52 (1.39, 1.65)	0.85 (0.76, 0.94)
Overweight or obese ($n=6154$)	*Reference*	0.95 (0.90, 1.00)	0.55 (0.50, 0.59)
Education, high school or less ($n=6148$)	*Reference*	1.64 (1.52, 1.77)	2.57 (2.43, 2.71)
Symptoms			
Cough >3 months ($n=6111$)	*Reference*	0.67 (0.60, 0.75)	0.53 (0.47, 0.59)
Phlegm >3 months ($n=6082$)	*Reference*	0.78 (0.70, 0.86)	0.75 (0.67, 0.82)
mMRC ⩾2 ($n=6131$)	*Reference*	1.22 (1.15, 1.29)	0.72 (0.66, 0.79)
Moderate-to-severe AE in the previous year	*Reference*	1.05 (0.94, 1.16)	0.73 (0.65, 0.82)
Six-minute walk distance <350 m ($n=5670$)	*Reference*	1.98 (1.81, 2.14)	1.07 (0.94, 1.19)
Severe-to-very severe COPD	*Reference*	0.98 (0.89, 1.07)	0.50 (0.44, 0.55)
Cardiovascular disease			
Hypertension ($n=6155$)	*Reference*	1.34 (1.25, 1.42)	0.81 (0.74, 0.88)
Congestive heart failure ($n=6145$)	*Reference*	1.33 (0.89, 1.77)	0.77 (0.50, 1.03)
Dyslipidemia ($n=6147$)	*Reference*	0.80 (0.72, 0.88)	0.24 (0.20, 0.27)
Myocardial infarction ($n=6155$)	*Reference*	0.88 (0.63, 1.12)	0.45 (0.33, 0.57)
Peripheral vascular disease ($n=6144$)	*Reference*	0.70 (0.36, 1.04)	0.34 (0.19, 0.50)

CHEST Original Research
BRONCHIECTASIS

Bronchiectasis in a Diverse US Population

Effects of Ethnicity on Etiology and Sputum Culture

Pamela J. McShane, MD; Edward T. Naureckas, MD, FCCP; and Mary E. Strek, MD, FCCP

University of Chicago

Background: **Previous studies of patients with bronchiectasis have found that the cause is idiopathic in the majority of cases, but these studies were done in homogeneous populations. We hypothesized that the etiology of bronchiectasis can be determined in a higher percentage of patients in a diverse US population and will differ significantly based on ethnicity.**
Methods: **One hundred twelve patients with bronchiectasis confirmed by chest CT scan entered the study. Data from 106 patients were available for full evaluation. Clinical questionnaire, pulmonary function tests, sputum microbiology, laboratory data, and immune function testing were done. Results were analyzed by ethnicity and etiology.**
Results: **Patients were 61.6% European American (EA), 26.8% African American (AA), 8.9% Hispanic American (HA), and 2.7% Asian American. A cause of bronchiectasis was determined in 93.3% of patients. In 63.2% of patients, bronchiectasis was caused by immune dysregulation, including deficiency (n = 18 [17%]), autoimmune disease (n = 33 [31.1%]), hematologic malignancy (n = 15 [14.2%]), and allergic bronchopulmonary aspergillosis (n = 1 [0.9%]). Rheumatoid arthritis was the cause of bronchiectasis in 28.6% of AA patients vs 6.2% of EA patients ($P < .05$). Hematologic malignancy was the etiology in 20.0% of the EA patients vs none of the AA patients ($P = .02$). A significantly higher percentage of HA patients had *Pseudomonas aeruginosa* in their sputum compared with AA and EA patients ($P = .01$).**
Conclusions: **The etiology of bronchiectasis can be determined in the majority of patients in a heterogeneous US population and is most often due to immune dysregulation. Rheumatoid arthritis is more likely in AA patients than EA patients. HA patients are more likely to have *P aeruginosa* in their sputum.**
CHEST 2012; 142(1):159–167

Abbreviations: AA = African American; AAT = α_1-antitrypsin; ACR = American College of Rheumatology; ANA = antinuclear antibody; BO = bronchiolitis obliterans; CF = cystic fibrosis; EA = European American; GVHD = graft vs host disease; HA = Hispanic American; HRCT = high-resolution CT; NTM = nontuberculous mycobacteria; RA = rheumatoid arthritis

"Rheumatoid arthritis is more likely in AA patients than EA patients. HA patients are more likely to have P aeruginosa in their sputum"

CHEST 2012; 142(1):159–167

Table 3—*Etiology According to Ethnic Group*

Etiology	All Ethnic Groups (N = 106)	Asian American (n = 3)	Hispanic American (n = 10)[a]	African American (n = 28)[a]	European American (n = 65)[a]	*P* Value
Autoimmune	33 (31.1)	0	4 (40.0)	10 (35.7)	19 (29.2)	.69
Rheumatoid arthritis	13 (12.3)	0	1 (10.0)	8 (28.6)[b]	4 (6.2)	.01
Sjögren syndrome	4 (3.8)	0	1 (10.0)	1 (3.6)	2 (3.1)	.39
Crohn's disease	3 (2.8)	0	0	0	3 (4.6)	.67
Autoimmune features	13 (12.3)	0	2 (20.0)	1 (3.6)	10 (15.4)	.15
ABPA	1 (0.9)	0	0	0	1 (1.5)	1.00
Immune deficiency	18 (17.0)	0	2 (20.0)	3 (10.7)	13 (20.0)	.61
Immunoglobulin deficiency	17 (16.0)	0	2 (20.0)	2 (7.1)	13 (20.0)	.28
HIV	1 (0.9)	0	0	1 (3.6)	0	.37
Hematologic malignancy	15 (14.2)	1 (33.3)	1 (10.0)	0[b]	13 (20.0)	.02
Aspiration	12 (11.3)	0	1 (10.0)	5 (17.9)	6 (9.2)	.46
NTM infection	10 (9.4)	2 (66.7)	0	2 (7.1)	6 (9.2)	1.00
PCD	3 (2.8)	0	0	0	3 (4.6)	.67
α_1-antitrypsin	12 (11.3)	0	2 (20.0)	1 (3.6)	9 (13.9)	.24
Prior pneumonia	10 (9.4)	0	3 (30.0)	1 (3.6)	6 (9.2)	.09
Mounier-Kuhn syndrome	1 (0.9)	0	0	1 (3.6)	0	.37
Amyloid	1 (0.9)	0	0	1 (3.6)	0	.37
Smoke inhalation	1 (0.9)	0	0	1 (3.6)	0	.37
Obstruction	1 (0.9)	0	0	1 (3.6)	0	.37
Idiopathic	7 (6.6)	0	0	2 (7.1)	5 (7.7)	1.00

CHEST 2012; 142(1):159–167

Modified from Dr. Choi's slide

Heterogeneity of bronchiectasis by race/region

Bronchiectasis in India: results from the European Multicentre Bronchiectasis Audit and Research Collaboration (EMBARC) and Respiratory Research Network of India Registry

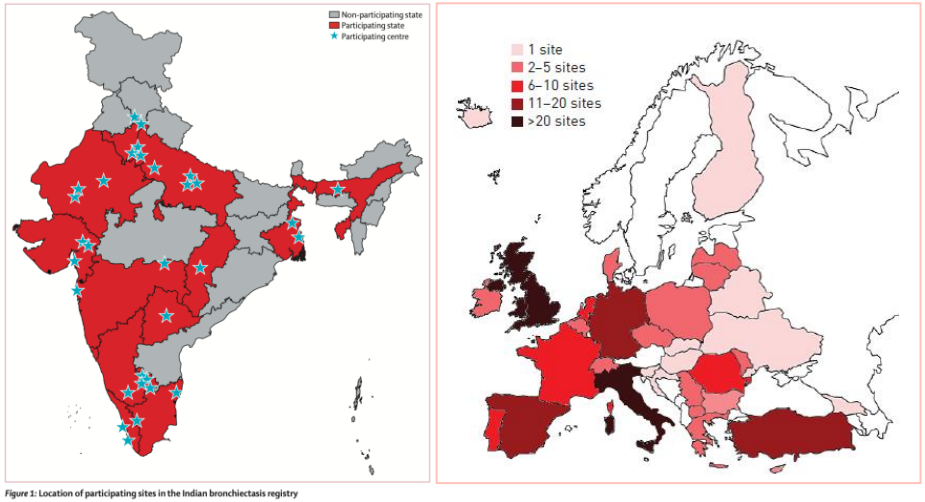


Figure 1: Location of participating sites in the Indian bronchiectasis registry

India *vs.* Europe – Very different

Demographics
Comorbidities
Etiologies
Severity
Exacerbation
…

Lancet Glob Health 2019;7:e1269
ERJ Open Res 2015;1:00081-2015

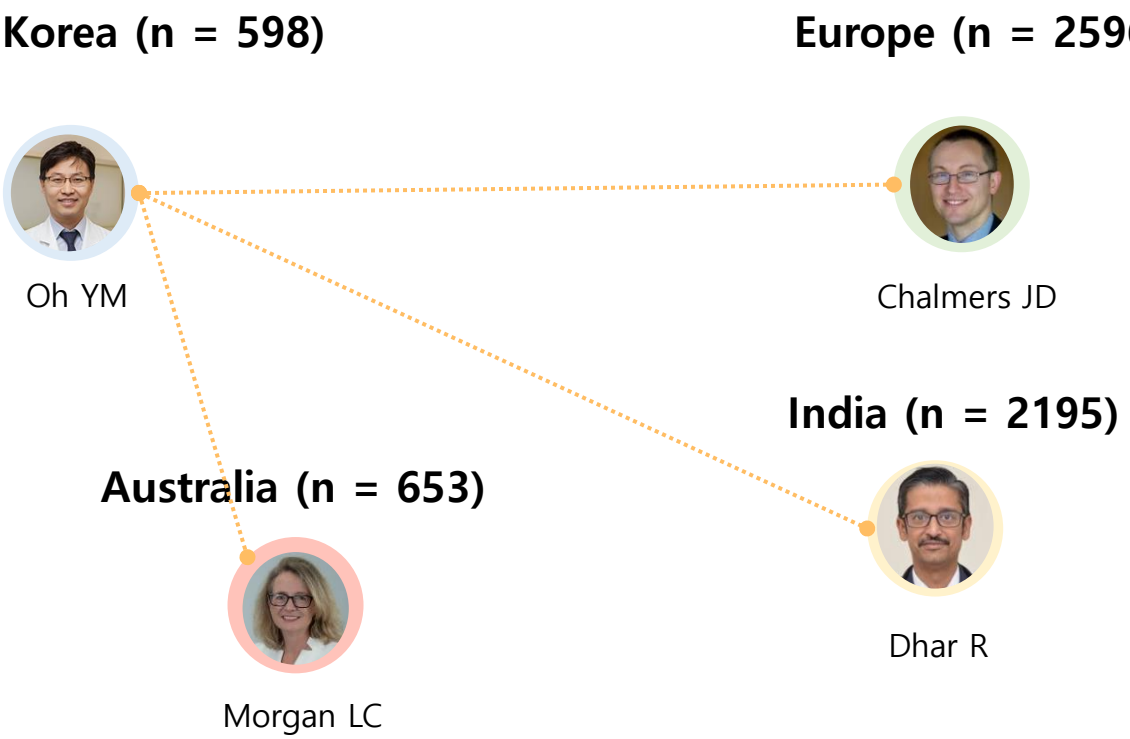
Contents

- **Nationwide bronchiectasis cohort**
  - EMBARC, EMBARC-India, BronchUK, RISBON, ABR, BRR, KMBARC
- **Heterogeneity of Bronchiectasis**
- **Comparison of clinical characteristics of bronchiectasis**
  - Korea/Europe/India/Australia
- **Summary**

Modified from Dr. Choi's slide

Collaboration

- Baseline characteristics
  - Analysed **598** patients (Aug 2018–Dec 2019)



Lancet Glob Health 2019;7:e1269
Respirology 2021;26:619

from Dr. Choi's slide

Demographics

	Korea (n=598)	Australia (n=653)	Europe (n=2596)	India (n=2195)
Age, years	**66 (60–72)**	73 (64–79)	**67 (57–74)**	56 (41–66)
Male	**264 (44.1)**	195 (29.9)	1010 (38.9)	**1249 (56.9)**
BMI, kg/m^2	**22.9** (20.7–25.4)	25.0 (21.5–29.0)	24.8 (21.8–28.1)	**21.5** (18.5–24.5)
Smoking hx.	**211 (35.3%)**	145 (22.2)	**990 (38.1)**	619 (28.2)

Data are presented as numbers (%) or medians (IQRs).
BMI = body mass index

Respirology 2021;26:619

from Dr. Choi's slide

Disease severity

	Korea (n=598)	Australia (n=653)	Europe (n=2596)	India (n=2195)
BSI score	6 (4–9)	**9 (6–12)**	6 (4–10)	7 (3–10)
BSI score class				
Mild	171 (27.4)	90 (17.9)	753 (29.0)	728 (33.2)
Moderate	257 (44.1)	143 (28.5)	926 (35.7)	674 (30.7)
Severe	**154 (26.5)**	**269 (53.6)**	**917 (35.3)**	**793 (36.1)**
Radiology				
Reiff score	5 (3–9)	4 (2–9)	4 (2–6)	6 (3–9)

Data are presented as numbers (%) or medians (IQRs).
BSI = Bronchiectasis Severity Index

Respirology 2021;26:619

from Dr. Choi's slide

Clinical status & Microbiology

	Korea (n=598)	Australia (n=653)	Europe (n=2596)	India (n=2195)
Clinical status				
mMRC scale	1 (1–1)	1 (0–2)	2 (1–3)	2 (1–3)
Exacerbation No.	1 (0–2)	1 (0–2)	2 (0–3)	1 (0–2)
≥1 admission	**109 (18.2)**	**199 (30.5)**	672 (25.9)	**851 (38.8)**
PFT				
FEV1, %pred.	**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				
P. aeruginosa	**66 (11.0)**	**122 (18.7)**	389 (15.0)	**301 (13.7)**
H. influenzae	9 (1.5)	63 (9.7)	**569 (21.9)**	11 (0.5)
S. aureus	4 (0.7)	17 (2.6)	156 (6.0)	50 (2.3)

Data are presented as numbers (%) or medians (IQRs).
PFT = pulmonary function test; FEV1 = forced expiratory volum in 1s

Respirology 2021;26:619

from Dr. Choi's slide

Comorbidities

	Korea (n=598)	Australia (n=653)	Europe (n=2596)	India (n=2195)
Ischemic heart disease	27 (4.5)	46 (7.0)	**453 (17.5)**	**355 (16.2)**
Stroke	11 (1.8)	20 (3.1)	152 (5.9)	9 (0.4)
Diabetes mellitus	73 (12.2)	42 (6.4)	260 (10.0)	315 (14.4)
COPD	**226 (37.8)**	95 (14.5)	431 (16.6)	**512 (23.3)**
Asthma	**134 (22.4)**	94 (14.4)	226 (8.7)	**485 (22.1)**
GORD	89 (14.9)	**224 (34.3)**	395 (15.2)	346 (15.8)
Osteoporosis	70 (11.7)	**151 (23.1)**	192 (7.4)	130 (5.9)

Data are presented as numbers (%).
GORD = gastrooesophageal reflux disease

Respirology 2021;26:619

from Dr. Choi's slide

Etiology & treatment

	Korea (n=598)	Australia (n=653)	Europe (n=2596)	India (n=2195)
Etiology				
1st	Idiopathic (41%)	Idiopathic (29%)	Idiopathic (42%)	TB (36%)
2nd	TB (20%)	Post-infective (27%)	Post-infective (17%)	Post-infective (22%)
3rd	Post-infective (20%)	NTM (7%)	COPD (9%)	Idiopathic (21%)
4th	Asthma (5%)	PCD (4%)	Asthma (6%)	ABPA (9%)
5th	NTM (4%)	ABPA (4%)	CTD (6%)	COPD (5%)
Treatment				
Long-term antibiotics	23 (3.9)	**205 (31.4)**	**503 (19.4)**	271 (12.3)
Inhaled antibiotics	0	27 (4.1)	166 (6.4)	79 (3.6)

Data are presented as numbers (%).

Respirology 2021;26:619

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Summary

- Nationwide bronchiectasis cohort (prospective)
  - Korea - KMBARC
  - Europe – EMBARC / India – EMBARC-india / UK – BronchUK / Spain – RISBON Australia – ABR / US – BRR

- Differences and similarities
  - Etiology, comorbidities, and treatment of bronchiectasis
  - among the different regions and ethnic groups

- Clinical guidelines for bronchiectasis
  - **The development of local guideline based on the epidemiologic data might be important**