

Hammond et al, Supplementary data

Supplemental methods

Aspergillus sensitisation and COPD - Systematic Review

The systematic review we performed aimed to establish the prevalence of Aspergillus sensitisation in patients with COPD, and the difference in lung function between sensitised and non-sensitised patients. The review was performed in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) statement (Moher, 2009). The search was carried out without language restrictions between April 1999 and April 2019 using the following databases: PubMed/Medline, EMBASE, The Cochrane Central and LILACS. The search strategy used for PubMed/MEDLINE simplified is Prevalence OR Epidemiology AND aspergill* AND sensiti?ation AND Chronic Obstructive Pulmonary Disease OR COPD OR COAD OR Pulmonary Emphysema OR Chronic Obstruct* OR Chronic Bronchitis. This automatic search was enhanced by a manual search to identify relevant literature.

We included Cohort studies, randomised control trials, quasi-randomised control trials, cross-sectional studies, case-control studies and case-series studies; they had to have included at least 50 COPD patients. In addition, sensitisation must have been assessed using either serum IgE analysis or skin prick testing. Two reviewers first screened the titles and abstracts of retrieved articles, and subsequently independently assessed the full text of each article against the inclusion criteria. A senior reviewer was available if any disagreements were found. Finally, the remaining studies were analysed for bias using the checklist of essential items laid out by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement (von Elm, 2008). The data extracted were: 1) Authors, publication year, study design 2) Sample size 3) Population

characteristics (age/gender) 4) Study location 5) Method of sensitisation assessment 6) Percentage of sample sensitised to *Aspergillus* 7) Lung function of sensitised and non-sensitised patients (FEV₁ as a percentage of predicted). The flow-chart in Figure S1 describes the study selection.

In order to create global estimates for the prevalence of *Aspergillus* sensitisation from a limited body of literature we used the following system: firstly, the countries where the studies identified were located had this data applied to them. Then, data obtained from China was applied to Central and Eastern Asian countries, excluding Russia. Data obtained from India was applied to Southern and South-East Asian countries, and Papua New Guinea. Data obtained from Colombia was applied to Latin American and Caribbean countries. We created a weighted average from the two European studies we found and applied this data to countries in Europe, North America and Australasia. For the remaining countries in Africa and the Eastern Mediterranean region, we created a weighted average for the prevalence of *Aspergillus* sensitisation from all of the data we obtained in our systematic review and applied it to these areas. Countries were allocated into regions using a system based on the combination of the World Health Organisation regions (WHO, 2018) and the smaller geographic regions presented by the United Nations Statistical Division (UNSD, 2019).

Microsoft Excel was used to create the weighted averages for applying sensitisation data globally, and for creating weighted averages and weighted standard deviations for comparing lung function between sensitised and non-sensitised patients.

References

- Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *Ann Intern Med*. 2009;151(4):264. doi:10.7326/0003-4819-151-4-200908180-00135

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World Health Organisation. World Health Statistics 2018. https://www.who.int/gho/publications/world_health_statistics/en/. Published 2018. Accessed June 3, 2019.

UNSD — Methodology, Standard country or area codes for statistical use (M49). <https://unstats.un.org/unsd/methodology/m49/>. Accessed May 30, 2019.

Supplementary Table 1. Population in thousands; COPD prevalence (GOLD stages II-IV) estimates; number of COPD hospitalisations annually by country; IA prevalence in COPD populations and associated mortality risk. Two data values are given for IA and their respective mortalities, to create a range of minimum and maximum prevalence and mortality with the Spain (1.3% prevalence and respective mortality of 71.7%) and China (3.9% and respective mortality of 43.0%). Mortality is calculated from the figures provided by Spain (71.7%, from the 1.3% prevalence figure calculated) and China studies (43.0%, from the 3.9% prevalence figure calculated) [11,34].

Country	Population size ²⁰	COPD population GOLD stages II-IV n (% of population)	COPD annual hospitalisation rate ²³ 10.5% of COPD population	IA annual rate ^{12,24} 1.30 - 3.90% of COPD hospitalisation rate	IA mortality rate ^{12,24} n (% of IA cases)	Additional information	
Northern Africa							
Africa	Algeria ^{23,31}	40,339,000	1,492,543 (3.70%)	156,717	2037 1.30% 6112 3.90%	1461 71.70% 2628 43.00%	BREATHE study; Epidemiological survey
	Egypt ^{23,31}	94,587,000	3,310,545 (3.50%)	347,607	4519 1.30% 13557 3.90%	3240 71.70% 5829 43.00%	BREATHE study; Epidemiological survey
	Libya ^{23,31}	6,288,000	232,656 (3.70%)	24,429	318 1.30% 953 3.90%	228 71.70% 410 43.00%	BREATHE study – Algeria data used to estimate COPD prevalence; Epidemiological survey
	Morocco ^{23,31}	35,272,000	775,984 (2.20%)	81,478	1059 1.30% 3178 3.90%	759 71.70% 455 43.00%	BREATHE study; Epidemiological survey
	Sudan ^{23,31}	38,879,000	1,360,765 (3.50%)	142,880	1857 1.30% 5572 3.90%	1332 71.70% 2396 43.00%	BREATHE study – Egypt data used to estimate COPD prevalence; Epidemiological survey
	Tunisia ^{23,31}	11,452,000	423,724	44,491	578 1.30%	415 71.70%	BREATHE study;

		(3.70%)		1735	3.90%	746	43.00%	Epidemiological survey
Sub-Saharan Africa								
Angola ³²	27,975,000	671,400 (2.40%)	70,497	916	1.30%	657	71.70%	Cameroon data used to estimate COPD prevalence; GOLD classification (breakdown of stages not specified)
				2749	3.90%	1182	43.00%	
Benin ^{23,31,32}	10,635,000	340,320 (3.20%)	35,734	465	1.30%	333	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
				1394	3.90%	599	43.00%	
Botswana ^{3,5}	2,224,000	424,784 (19.10%)	44,602	580	1.30%	416	71.70%	South Africa data used to estimate COPD prevalence; BOLD study; GOLD stage II-IV
				1739	3.90%	748	43.00%	
Burkina Faso ^{23,31,32}	18,184,000	581,888 (3.20%)	61,098	794	1.30%	569	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
				2383	3.90%	1025	43.00%	
Burundi ³²⁻³⁵	10,246,000	799,188 (7.80%)	83,915	1091	1.30%	782	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
				3273	3.90%	1407	43.00%	
Cameroon ³²	22,967,000	551,208	57,877	752	1.30%	539	71.70%	Cameroon data used to estimate COPD prevalence;

		(2.40%)		2257	3.90%	971	43.00%	GOLD (breakdown of stages not specified)
Central African Republic ³²	4,577,000	109,848 (2.40%)	11,534	150	1.30%	108	71.70%	Cameroon data used to estimate COPD prevalence; GOLD (breakdown of stages not specified)
				450	3.90%	193	43.00%	
Chad ³²	14,071,000	337,704 (2.40%)	35,459	461	1.30%	331	71.70%	Cameroon data used to estimate COPD prevalence; GOLD (breakdown of stages not specified)
				1383	3.90%	595	43.00%	
Congo ³²	5,025,000	120,600 (2.40%)	12,663	165	1.30%	118	71.70%	Cameroon data used to estimate COPD prevalence; GOLD (breakdown of stages not specified)
				494	3.90%	212	43.00%	
Congo ³² (Democratic Republic of the)	76,590,000	1,838,160 (2.40%)	193,007	2509	1.30%	1799	71.70%	Cameroon data used to estimate COPD prevalence; GOLD (breakdown of stages not specified))
				7527	3.90%	3237	43.00%	
Côte d'Ivoire ^{23,31,32}	23,220,000	743,040 (3.20%)	78,019	1014	1.30%	727	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
				3043	3.90%	1308	43.00%	
Equatorial Guinea ³²	1,179,000	28,296 (2.40%)	2,971	39	1.30%	28	71.70%	Cameroon data used to estimate COPD prevalence; GOLD (breakdown of stages not specified)
				116	3.90%	50	43.00%	

	Eritrea ³²⁻³⁵	4,876,000	380,328 (7.80%)	39,934	519	1.30%	372	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
					1557	3.90%	670	43.00%	
	Eswatini ^{3,5}	1,327,000	253457 (19.10%)	26,613	346	1.30%	248	71.70%	South Africa data used to estimate COPD prevalence; BOLD study; GOLD stage II-IV
					1038	3.90%	446	43.00%	
	Ethiopia ³²⁻³⁵	100,469,000	7,836,582 (7.80%)	822,841	10697	1.30%	7670	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
					32091	3.90%	13799	43.00%	
	Gabon ³²	1,950,000	46,800 (2.40%)	4,914	64	1.30%	46	71.70%	Cameroon data used to estimate COPD prevalence; GOLD (breakdown of stages not specified)
					192	3.90%	82	43.00%	
	Gambia ^{23,31,32}	1,986,000	63,552 (3.20%)	6,673	87	1.30%	62	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					260	3.90%	112	43.00%	
	Ghana ^{23,31,32}	27,746,000	887,872 (3.20%)	93,227	1212	1.30%	869	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					3636	3.90%	1563	43.00%	

	Guinea ^{23,31,32}	12,152,000	388,864 (3.20%)	40,831	531	1.30%	381	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					1592	3.90%	685	43.00%	
	Guinea-Bissau ^{23,31,32}	1,777,000	56,864 (3.20%)	5,971	78	1.30%	56	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					233	3.90%	100	43.00%	
	Kenya ³²⁻³⁵	47,456,000	3,701,568 (7.80%)	388,665	5053	1.30%	3623	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
					15158	3.90%	6518	43.00%	
	Lesotho ^{3,5}	2,192,000	418,672 (19.10%)	43,961	571	1.30%	410	71.70%	South Africa data used to estimate COPD prevalence; BOLD study; GOLD stage II-IV
					1714	3.90%	737	43.00%	
	Liberia ^{23,31,32}	4,525,000	144,800 (3.20%)	15,204	198	1.30%	142	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					593	3.90%	255	43.00%	
	Madagascar ³²⁻³⁵	24,357,000	1,899,846	199,484	2593	1.30%	1859	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence;

		(7.80%)		7780	3.90%	3345	43.00%	GOLD stages II-IV
Malawi ³²⁻³⁵	17,668,000	1,378,104 (7.80%)	144,701	1881	1.30%	1349	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
				5643	3.90%	2427	43.00%	
Mali ^{23,31,32}	17,541,000	561,312 (3.20%)	58,938	766	1.30%	549	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
				2299	3.90%	988	43.00%	
Mauritania ^{23,31,32}	4,205,000	134,560 (3.20%)	14,129	184	1.30%	132	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
				551	3.90%	237	43.00%	
Mauritius ³²⁻³⁵	1,279,000	99,762 (7.80%)	10,475	136	1.30%	98	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
				409	3.90%	176	43.00%	
Mozambique ³²⁻³⁵	28,165,000	2,196,870 (7.80%)	230,671	2999	1.30%	2150	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
				8996	3.90%	3868	43.00%	
Namibia ^{3,5}	2,442,000	466,422 (19.10%)	48,974	637	1.30%	456	71.70%	South Africa data used to estimate COPD prevalence; BOLD study; GOLD stage II-IV
				1910	3.90%	821	43.00%	

	Niger ^{23,31,32}	19,977,000	639,264 (3.20%)	67,123	873	1.30%	626	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					2618	3.90%	1126	43.00%	
	Nigeria ^{23,31,32}	181,946,000	5,822,272 (3.20%)	611,339	7947	1.30%	5698	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					23842	3.90%	10252	43.00%	
	Rwanda ³²	11,674,000	1,120,704 (9.60%)	117,674	1530	1.30%	1097	71.70%	LLN criteria used, ≥45yrs
					4589	3.90%	1973	43.00%	
	Senegal ^{23,31,32}	15,062,000	481,984 (3.20%)	50,608	658	1.30%	472	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					1974	3.90%	849	43.00%	
	Sierra Leone ^{23,31,32}	7,264,000	232,448 (3.20%)	24,407	317	1.30%	227	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
					952	3.90%	409	43.00%	
	Somalia ³²⁻³⁵	13,969,000	1,089,582	114,406	1487	1.30%	1066	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence;

		(7.80%)		4462	3.90%	1919	43.00%	GOLD stages II-IV
South Africa ^{3,5}	55,778,000	10,653,598 (19.10%)	1,118,628	14542	1.30%	10427	71.70%	BOLD study; GOLD stage II-IV
				43626	3.90%	18759	43.00%	
South Sudan ³²⁻³⁵	11,954,000	932,412 (7.80%)	97,903	1273	1.30%	913	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
				3818	3.90%	1642	43.00%	
Tanzania (United Republic of) ^{36,37}	54,183,000	4,090,817 (7.55%)	429,536	5584	1.30%	4004	71.70%	GOLD stages II-IV
				16752	3.90%	7203	43.00%	
Togo ^{23,31,32}	7,453,000	238,496 (3.20%)	25,042	326	1.30%	233	71.70%	Average of Cameroon and Algeria data used to estimate COPD prevalence; BREATHE; GOLD classification (breakdown of stages not specified)
				977	3.90%	420	43.00%	
Uganda ³³	40,291,000	1,438,389 (3.57%)	151,031	1963	1.30%	1408	71.70%	GOLD stages II-IV
				5890	3.90%	2533	43.00%	
Zambia ³²⁻³⁵	16,175,000	1,261,650 (7.80%)	132,473	1722	1.30%	1235	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
				5166	3.90%	2222	43.00%	
Zimbabwe ³²⁻³⁵	15,866,000	1,237,548 (7.80%)	129,943	1689	1.30%	1211	71.70%	A weighted average from Eastern Africa data used to estimate COPD prevalence; GOLD stages II-IV
				13644	3.90%	5867	43.00%	
Totals:	1,197,415,000	64,298,051	6,751,295	87767	1.30%	62929	71.70%	
				271877	3.90%	115996	43.00%	

Latin American and the Caribbean								
Americas	Argentina ^{14,36}	44,291,000	3,981,761 (8.99%)	418,085	5435	1.30%	3897	71.70%
					16305	3.90%	7011	43.00%
	Bolivia (Plurinational State of) ⁵	10,852,000	765,066 (7.05%)	80,332	1044	1.30%	749	71.70%
					3133	3.90%	1347	43.00%
	Brazil ^{5,37}	209,009,000	12,645,045 (6.05%)	1,327,730	17260	1.30%	12376	71.70%
					51781	3.90%	22266	43.00%
	Chile ⁵	18,089,000	1,275,275 (7.05%)	133,904	1741	1.30%	1248	71.70%
					5222	3.90%	2246	43.00%
	Colombia ^{38,39}	48,801,000	1,351,788 (2.77%)	141,938	1845	1.30%	1323	71.70%
					5536	3.90%	2380	43.00%
	Costa Rica ⁵	4,882,000	151,342 (3.10%)	15,891	207	1.30%	148	71.70%
					620	3.90%	266	43.00%
	Cuba ⁴⁰	11,773,000	1,659,993 (14.10%)	174,299	2266	1.30%	1625	71.70%
					6798	3.90%	2923	43.00%
	Dominican Republic ⁴¹	10,658,000	1,502,778 (14.10%)	157,792	2051	1.30%	1471	71.70%
					6154	3.90%	2646	43.00%

	Ecuador ^{5,41}	16,344,000	1,152,252 (7.05%)	120,986	1573	1.30%	1128	71.70%	Chile data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
					4718	3.90%	2029	43.00%	
El Salvador ⁵	6,414,000	198,834 (3.10%)	20,878	271	1.30%	195	71.70%	Mexico data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV	
					814	3.90%	350	43.00%	
Guatemala ⁵	16,252,000	503,812	52,900	688	1.30%	493	71.70%	Mexico data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV	
					2063	3.90%	887	43.00%	
Haiti ⁴⁰	10,807,000	1,523,787 (14.10%)	159,998	2080	1.30%	1491	71.70%	Jamaica data used to estimate COPD prevalence; COPD classification system not specified	
					6240	3.90%	2683	43.00%	
Honduras ⁵	9,032,000	279,992 (3.10%)	29,399	382	1.30%	274	71.70%	Mexico data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV	
					1147	3.90%	493	43.00%	
Jamaica ⁴⁰	2,923,000	412,143 (14.10%)	43,275	563	1.30%	403	71.70%	COPD classification system not specified	
					1688	3.90%	726	43.00%	
Mexico ⁵	127,322,000	3,946,982 (3.10%)	414,433	5388	1.30%	3863	71.70%	BOLD study; GOLD stages II-IV	
					16163	3.90%	6950	43.00%	
Nicaragua ⁵	6,140,000	190,340 (3.10%)	19,986	260	1.30%	186	71.70%	Mexico data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV	
					779	3.90%	335	43.00%	

									II-IV
Panama ⁵	4,023,000	52,299 (3.10%)	5,491	71	1.30%	51	71.70%	Mexico data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV	
				214	3.90%	92	43.00%		
Paraguay ⁵	6,713,000	406,137 (6.05%)	42,644	554	1.30%	397	71.70%	Brazil data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV	
				1663	3.90%	715	43.00%		
Peru ⁴²	31,776,000	565,613 (1.78%)	59,389	772	1.30%	554	71.70%	GOLD stages II-IV	
				2316	3.90%	996	43.00%		
Puerto Rico ⁴⁰	3,769,000	531,429 (14.10%)	55,800	725	1.30%	520	71.70%	Jamaica data used to estimate COPD prevalence; COPD classification system not specified	
				2176	3.90%	936	43.00%		
Trinidad and Tobago ⁴⁰	1,381,000	194,721 (14.10%)	20,446	266	1.30%	191	71.70%	Jamaica data used to estimate COPD prevalence; COPD classification system not specified	
				797	3.90%	343	43.00%		
Uruguay ⁴³	3,526,000	250,346 (7.10%)	26,286	342	1.30%	245	71.70%	PLATINO study; GOLD stages II-IV	
				1025	3.90%	441	43.00%		
Venezuela (Bolivarian Republic of) ⁴³	31,497,000	1,795,329 (5.70%)	188,510	2451	1.30%	1757	71.70%	PLATINO study; GOLD stages II-IV	
				7352	3.90%	3161	43.00%		
Northern America									
Canada ³	36,939,000	3,028,998	318,045	4135	1.30%	2964	71.70%	BOLD study;	

			(8.20%)		12404	3.90%	5334	43.00%	GOLD stages II-IV
United States of America ⁵	328,030,000	46,908,290 (14.30%)	4,925,370	64030	1.30%	45909	71.70%	BOLD study; GOLD stages II-IV	
				192089	3.90%	82598	43.00%		
				115712	1.30%	82965	71.70%		
Totals:	984,991,000	84,770,538	8,900,906	347135	3.90%	149268	43.00%		
Asia	Central Asia								
	Kazakhstan ⁴⁴	18,074,000	777,182 (4.30%)	81604	1061	1.30%	761	71.70%	GOLD (stages not specified) Data for EURO WHO region
					3183	3.90%	1369	43.00%	
	Kyrgyzstan ⁴⁵	5,924,000	485768 (8.20%)	51006	663	1.30%	475	71.70%	GOLD stages II-IV
					1989	3.90%	855	43.00%	
	Tajikistan ⁴⁶	8,612,000	1179844 (13.70%)	123884	1610	1.30%	1155	71.70%	GOLD (stages not specified) Data for EURO WHO region
					4831	3.90%	2078	43.00%	
	Turkmenistan ⁴⁶	5,613,000	768981 (13.70%)	80743	1050	1.30%	753	71.70%	GOLD (stages not specified) Data for EURO WHO region
					3149	3.90%	1354	43.00%	
	Uzbekistan ⁴⁶	31,261,000	4282757 (13.70%)	449689	5846	1.30%	4192	71.70%	GOLD (stages not specified) Data for EURO WHO region
					17538	3.90%	7541	43.00%	
Eastern Asia									
	China ^{3,48-50}	1,421,905,000	82,754,871	8,689,261	112960	1.30%	80993	71.70%	BOLD study;

		(5.82%)		338881	3.90%	145719	43.00%	GOLD stages II-IV
Hong Kong ^{3,48-50}	7,460,000	434,172 (5.82%)	45,588	470	1.30%	337	71.70%	China data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
				1778	3.90%	765	43.00%	
Japan ⁵¹	134,230,000	6443040 (4.80%)	676519	8795	1.30%	6306	71.70%	GOLD stages II-IV
				26384	3.90%	11345	43.00%	
Korea (Democratic People's Republic of) ⁵²	25,736,000	3448624 (13.40%)	362106	4707	1.30%	3375	71.70%	South Korea data used to estimate COPD prevalence; FEV1 <0.7
				14122	3.90%	6073	43.00%	
Korea (Republic of) ⁵²	51,926,000	6958084 (13.40%)	730599	9498	1.30%	6810	71.70%	FEV1 <0.7
				28493	3.90%	12252	43.00%	
Mongolia ^{3,48-50}	2,999,000	174,542 (5.82%)	18327	238	1.30%	171	71.70%	China data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
				715	3.90%	307	43.00%	
Taiwan, province of China ^{3,48-50}	24,042,000	1,399,244 (5.82%)	146921	1910	1.30%	1369	71.70%	China data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
				5730	3.90%	2464	43.00%	
South-Eastern Asia								
Cambodia ⁵³	15,628,000	578236 (3.70)	60715	789	1.30%	566	71.70%	Vietnam data used to estimate COPD prevalence; GOLD stages II-IV
				2368	3.90%	1018	43.00%	
Indonesia ⁵	260,597,000	32574625 (12.50%)	3420336	44464	1.30%	31881	71.70%	Philippines data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
				133393	3.90%	57359	43.00%	

	Lao People's Democratic Republic ⁵³	6,712,000	248344 (3.70%)	26076	339	1.30%	243	71.70%	Vietnam data used to estimate COPD prevalence; GOLD stages II-IV
					1017	3.90%	437	43.00%	
	Malaysia ⁵⁴	31,049,000	1288534 (4.15%)	135296	1759	1.30%	1261	71.70%	Thailand data used to estimate COPD prevalence; GOLD stages II-IV
					5277	3.90%	2269	43.00%	
	Myanmar ⁵⁴	52,885,000	2194728 (4.15%)	230446	2996	1.30%	2148	71.70%	Thailand data used to estimate COPD prevalence; GOLD stages II-IV
					8987	3.90%	3865	43.00%	
	Philippines ⁵	102,565,000	12820625 (12.50%)	1346166	17500	1.30%	12548	71.70%	BOLD study; GOLD stages II-IV
					52500	3.90%	22575	43.00%	
	Singapore ⁵³	5,651,000	209087 (3.70%)	21954	285	1.30%	205	71.70%	Vietnam data used to estimate COPD prevalence; GOLD stages II-IV
					856	3.90%	368	43.00%	
	Thailand ⁵⁴	70,050,000	2907075 (4.15%)	305243	3968	1.30%	2845	71.70%	GOLD stages II-IV
					11904	3.90%	5119	43.00%	
	Timor-Leste ⁵	1,247,000	155875 (12.50%)	16367	213	1.30%	153	71.70%	Philippines data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
					638	3.90%	274	43.00%	
	Vietnam ⁵³	94,734,000	3505158 (3.70%)	368042	4785	1.30%	3431	71.70%	GOLD stages II-IV
					14354	3.90%	6172	43.00%	
Southern Asia									
	Afghanistan ⁴⁷	33,866,000	4673508 (13.80%)	490718	6379	1.30%	4574	71.70%	Pakistan data used to estimate COPD prevalence; GOLD stages not specified
					19138	3.90%	8229	43.00%	
	Bangladesh ⁵⁵	162,678,000	17569224	1844769	23982	1.30%	17195	71.70%	GOLD stages II-IV

		(10.80%)		71946	3.90%	30937	43.00%	
India ⁵⁶	1,322,312,000	93884152 (7.10%)	9857836	128152	1.30%	91885	71.70%	GOLD stage breakdown not specified
				384456	3.90%	165316	43.00%	
Iran (Islamic Republic of) ⁵⁷	80,142,000	7373064 (9.20%)	774172	10064	1.30%	7216	71.70%	GOLD stage breakdown not specified
				30193	3.90%	12983	43.00%	
Nepal ^{3,48-50}	28,930,000	1,683,726 (5.82%)	176791	2298	1.30%	1648	71.70%	China data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
				6895	3.90%	2965	43.00%	
Pakistan ⁴⁷	190,944,000	26350272 (13.80%)	2766779	35968	1.30%	25789	71.70%	GOLD stages not specified
				107904	3.90%	46399	43.00%	
Sri Lanka ⁵⁶	20,995,000	1490645 (7.10%)	156518	2035	1.30%	1459	71.70%	India data used to estimate COPD prevalence; GOLD stage breakdown not specified
				6104	3.90%	2625	43.00%	
Western Asia								
Armenia ⁴⁶	2,926,000	397,936 (13.6%)	41,783	543	1.30%	389	543	GOLD (stages not specified) Data for EURO WHO region
				1630	3.90%	701	1630	
Azerbaijan ⁴⁶	9,756,000	1336572 (13.70%)	140340	1824	1.30%	1308	71.70%	GOLD (stages not specified) Data for EURO WHO region
				5473	3.90%	2354	43.00%	
Bahrain ^{23,31,58}	1,376,000	41968	4407	57	1.30%	41	71.70%	Saudi Arabia data used to estimate COPD prevalence;

		(3.05%)		172	3.90%	74	43.00%	BREATHE (epidemiological survey) and GOLD (stages II-IV)
Cyprus ⁵⁹	1,192,000	36952 (3.10%)	3880	50	1.30%	36	71.70%	GOLD stages II-IV
				151	3.90%	65	43.00%	
Georgia ⁴⁶	4,099,000	561563 (13.70%)	58964	767	1.30%	550	71.70%	GOLD (stages not specified) Data for EURO WHO region
				2300	3.90%	989	43.00%	
Iraq ⁶⁰	36,327,000	4915043 (13.53%)	516080	6709	1.30%	4810	71.70%	GOLD stage II and III
				20127	3.90%	8655	43.00%	
Israel ^{23,31}	8,222,000	443988 (5.40%)	46619	606	1.30%	435	71.70%	Jordan data used to estimate COPD prevalence; BREATHE study; Epidemiological survey
				1818	3.90%	782	43.00%	
Jordan ^{23,31}	9,224,000	498096 (5.40%)	52300	680	1.30%	487	71.70%	BREATHE study; Epidemiological survey
				2040	3.90%	877	43.00%	
Kuwait ⁶⁰	3,950,000	534435 (13.53%)	56116	730	1.30%	523	71.70%	Iraq data used to estimate COPD prevalence; GOLD stage II and III
				2189	3.90%	941	43.00%	
Lebanon ^{23,31}	5,952,000	315456 (5.30%)	33123	431	1.30%	309	71.70%	BREATHE study; Epidemiological survey
				1292	3.90%	555	43.00%	
Oman ^{23,31,58}	4,219,000	128680 (3.05%)	13511	176	1.30%	126	71.70%	Saudi Arabia data used to estimate COPD prevalence; BREATHE study (epidemiological survey) and GOLD (stages II-IV)
				527	3.90%	227	43.00%	
Palestine (State of) ^{23,31}	4,688,000	164080	17228	224	1.30%	161	71.70%	Egypt data used to estimate COPD prevalence; BREATHE study;

		(3.50%)		672	3.90%	289	43.00%	Epidemiological survey	
Qatar ^{23,31,58}	2,488,000	75884 (3.05%)	7968	104	1.30%	74	71.70%	Saudi Arabia data used to estimate COPD prevalence; BREATHE study (epidemiological survey) and GOLD (stages II-IV)	
				311	3.90%	134	43.00%		
Saudi Arabia ^{23,31,58}	31,722,000	967521 (3.05%)	101590	1321	1.30%	947	71.70%	BREATHE study (epidemiological survey) and GOLD (stages II-IV)	
				3962	3.90%	1704	43.00%		
Syrian Arab Republic ^{23,31}	18,877,000	1151497 (6.10%)	120907	1572	1.30%	1127	71.70%	BREATHE study; Epidemiological survey	
				4715	3.90%	2028	43.00%		
Turkey ⁵	79,456,000	8422336 (10.60%)	884345	11496	1.30%	8243	71.70%	BOLD study; GOLD stages II-IV; BREATHE study; Epidemiological survey	
				34489	3.90%	14830	43.00%		
United Arab Emirates ^{23,31}	9,164,000	174116 (1.90%)	18282	238	1.30%	170	71.70%	BREATHE study; Epidemiological survey	
				713	3.90%	307	43.00%		
Yemen ^{23,31,58}	27,040,000	824720 (3.05%)	86596	1126	1.30%	807	71.70%	Saudi Arabia data used to estimate COPD prevalence; BREATHE study (epidemiological survey) and GOLD (stages II-IV)	
				3377	3.90%	1452	43.00%		
Totals:	4,476,519,000	339,206,893	35,616,724	462894	1.30%	331895	71.70%		
				1389052	3.90%	597292	43.00%		
Europe	Eastern Europe								
	Belarus ³	9,804,000	1068636 (10.90%)	112207	1459	1.30%	1046	71.70%	Poland data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
					4376	3.90%	1882	43.00%	

	Bulgaria ⁴⁶	7,450,000	1020650 (13.70%)	107168	1393	1.30%	999	71.70%	GOLD (stages not specified) Data for EURO WHO region
	4180	3.90%	1797	43.00%					
	Czech Republic ³	10,915,000	1189735 (10.90%)	124922	1624	1.30%	1164	71.70%	Poland data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
					4872	3.90%	2095	43.00%	
	Hungary ³	10,113,000	1071978 (10.60%)	112558	1463	1.30%	1049	71.70%	Austria data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
					4390	3.90%	1888	43.00%	
	Moldova (Republic of) ⁴⁶	4,153,000	568961 (13.70%)	59741	777	1.30%	557	71.70%	GOLD (stages not specified) Data for EURO WHO region
					2330	3.90%	1002	43.00%	
	Poland ⁵	39,416,000	4296344 (10.90%)	451116	5865	1.30%	4205	71.70%	BOLD study; GOLD stages II-IV
					17594	3.90%	7565	43.00%	
	Romania ⁶¹	20,635,000	1919055 (9.30%)	201501	2620	1.30%	1878	71.70%	GOLD (stages not specified)
					7859	3.90%	3379	43.00%	
	Russian Federation ⁶²	148,880,000	7146240 (4.80%)	750355	9755	1.30%	6994	71.70%	LLN
					29264	3.90%	12583	43.00%	
	Slovakia ⁵	5,575,000	607675 (10.90%)	63806	829	1.30%	595	71.70%	Poland data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
					2488	3.90%	1070	43.00%	
	Ukraine ⁴⁶	46,502,000	6370774	668931	8696	1.30%	6235	71.70%	GOLD (stages not specified)

		(13.70%)			26088	3.90%	11218	43.00%	Data for EURO WHO region
Northern Europe									
Denmark ^{63,64}	5,878,000	734750 (12.65%)	77149	1003 3009	1.30% 3.90%	5698 1294	71.70% 43.00%	GOLD stages II-IV	
Estonia ⁶²	1,369,000	65712 (4.80%)	6900	90 269	1.30% 3.90%	64 116	71.70% 43.00%	Russia data used to estimate COPD prevalence; LLN	
Finland ⁶⁵⁻⁶⁷	5,677,000	313938 (5.53%)	32964	429 1286	1.30% 3.90%	307 553	71.70% 43.00%	GOLD stages II-IV	
Ireland ^{63,68}	4,812,000	457140 (9.50%)	48000	624 1872	1.30% 3.90%	447 805	71.70% 43.00%	UK data used to estimate COPD prevalence; GOLD stages II-IV	
Latvia ⁶²	2,080,000	99840 (4.80%)	10483	136 409	1.30% 3.90%	98 176	71.70% 43.00%	Russia data used to estimate COPD prevalence; LLN	
Lithuania ⁶²	3,054,000	146592 (4.80%)	15392	200 4756	1.30% 3.90%	143 2045	71.70% 43.00%	Russia data used to estimate COPD prevalence; LLN	
Norway ⁵	5,340,000	443220 (8.30%)	46538	605 1815	1.30% 3.90%	434 780	71.70% 43.00%	BOLD study; GOLD stages II-IV	
Sweden ^{21,63}	10,093,000	817533 (8.10%)	85841	1116 3348	1.30% 3.90%	800 1440	71.70% 43.00%	GOLD stages II-IV	
United Kingdom and Northern	67,582,000	6420290	674130	8764	1.30%	6284	71.70%	GOLD stages II-IV	

Ireland ^{63,68,69}		(9.50%)		26291	3.90%	11305	43.00%	
Southern Europe								
Albania ^{70,71}	3,007,000	264616 (8.80%)	27785	361	1.30%	259	71.70%	Greece data used to estimate COPD prevalence; GOLD stages II-IV
				1084	3.90%	466	43.00%	
Bosnia and Herzegovina ^{70,71}	3,671,000	323048 (8.80%)	33920	441	1.30%	316	71.70%	Greece data used to estimate COPD prevalence; GOLD stages II-IV
				1323	3.90%	569	43.00%	
Croatia ^{72,73}	4,415,000	291390 (6.60%)	30596	398	1.30%	285	71.70%	Italy data used to estimate COPD prevalence; GOLD stages II-IV
				1193	3.90%	513	43.00%	
Greece ^{70,71}	11,699,000	1029512 (8.80%)	108099	1405	1.30%	1008	71.70%	GOLD stages II-IV
				4216	3.90%	1813	43.00%	
Italy ^{72,73}	62,261,000	4109226 (6.60%)	431469	5609	1.30%	4022	71.70%	GOLD stages II-IV
				16827	3.90%	7236	43.00%	
Macedonia (the former Yugoslav Republic of) ^{70,71}	2,133,000	187704 (8.80%)	19709	256	1.30%	184	71.70%	Greece data used to estimate COPD prevalence; GOLD stages II-IV
				769	3.90%	331	43.00%	
Portugal ⁷⁴	10,857,000	792561 (7.30%)	83219	1082	1.30%	776	71.70%	GOLD stages II-IV
				3246	3.90%	1396	43.00%	
Serbia ⁷⁵	9,136,000	324328 (3.55%)	34054	443	1.30%	317	71.70%	GOLD (stages not specified)
				1328	3.90%	571	43.00%	
Slovenia ³	2,149,000	227794 (10.60%)	23918	311	1.30%	223	71.70%	Austria data used as estimate for COPD prevalence; BOLD study; GOLD stages
				933	3.90%	401	43.00%	

									II-IV
Spain ^{76,77}	48,009,000	2520473 (5.25%)	264650	3440 10321	1.30% 3.90%	2467 4438	71.70% 43.00%	GOLD stages II-IV	
Western Europe									
Austria ³	8,999,000	953894 (10.60%)	100159	1302 3906	1.30% 3.90%	934 1680	71.70% 43.00%	BOLD study; GOLD stages II-IV	
Belgium ⁷⁸	11,686,000	1215344 (10.40%)	127611	1659 4977	1.30% 3.90%	1189 2140	71.70% 43.00%	Netherlands data used to estimate COPD prevalence; GOLD stages II-IV	
France ⁷⁹	66,627,000	4997025 (7.50%)	524688	6821 20463	1.30% 3.90%	4891 8799	71.70% 43.00%	GOLD stages II-IV	
Germany ³	85,901,000	5068159 (5.90%)	532157	6918 20754	1.30% 3.90%	4960 8924	71.70% 43.00%	BOLD study; GOLD stages II-IV	
Netherlands ⁷⁸	17,488,000	1818752 (10.40%)	190969	2483 7448	1.30% 3.90%	1780 3203	71.70% 43.00%	GOLD stages II-IV	
Switzerland ⁸⁰	8,592,000	601440 (7.00%)	63151	821 2463	1.30% 3.90%	589 1059	71.70% 43.00%	GOLD stages II-IV	
Totals:	765,958,000	59,484,329	6,245,855	88139 247744	1.30% 3.90%	63196 106530	71.70% 43.00%		
Oceania									
Oceania	Australia ³	24,429,000	2638332 (10.80%)	277025	3601 10804	1.30% 3.90%	2582 4646	71.70% 43.00%	BOLD study; GOLD stages II-IV
					543 1630	1.30% 3.90%	389 701	71.70% 43.00%	GOLD stages II-IV

	Papua New Guinea ⁵	7,970,000	996250 (12.50%)	104606	1360 4080	1.30% 3.90%	975 1754	71.70% 43.00%	Philippines data used to estimate COPD prevalence; BOLD study; GOLD stages II-IV
Totals:		37,131,000	4,032,543	423,417	5504 16513	1.30% 3.90%	3947 7101	71.70% 43.00%	

LLN = lower limit of normal

References for Table S1

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Figure S1
Literature searching for articles on Aspergillus sensitisation and COPD