

Table 1. Overview of studies reporting *Aspergillus* colonisation rates in patients with cystic fibrosis.

References	Focus	Country	Patient population	Duration and frequency of sampling*	Colonisation rates
Nelson, 1979 [22]	primary	USA	46 pts	once	56.7% Asp colonisation (no info if ABPA or sens)
Laufer, 1984 [23]	primary	USA	100 pts aged 2 – 34 yrs	once	9% Af colonisation overall 10% in those with ABPA
Bauernfeind, 1987 [24]	secondary	Germany	102 pts	22 mo period, multiple samples	5.9% Af colonisation (no info if ABPA or sens)
Mroueh, 1994 [25]	primary	USA	236 pts aged 1 – 41 yrs (mean age 14.5 yrs)	retrospective	25.4% overall Af colonisation 19% isolated Af colonisation 6.5% Af colonisation + ABPA based on single cultures
Flume, 1994 [26]	primary	USA	27 pts prior to lung transplantation	once	63% Asp colonisation (no info if ABPA or sens)
Cimon, J Med Mycol 1995 [in 27]	primary	France	210 pts	once	21.4% Af pos culture (only 1% ABPA in the study population)
Becker, 1996 [28]	primary	USA	49 adult pts	1 yr cross-sectional	16% Af colonisation (no data if ABPA or sens) based on single cultures
Milla, 1996 [29]	primary	USA	212 paediatric pts > 5 yrs mean age 17.2 +/- 9.2 yrs	multiple 1 yr study period	21.2% at least one Asp pos culture
Burns, 1998 [30]	secondary	USA	465 pts > 6 yrs	once	23.2% Asp colonisation

					(ABPA or sens not exclusion criteria for study)
Burns, 1999 [31]	secondary	USA	520 pts ≥ 6 yrs of age, FEV1 25%-75% predicted	twice (baseline and end of study)	25% Asp colonisation baseline 16.2% wk 20 (end of study) (18% vs 8%, tobra vs placebo)
Bargon, 1999 [32]	primary	Germany	104 adult pts	repeated cultures	41.3% Asp colonisation (no info if ABPA or sens)
Cimon, 2000 [33]	secondary	France	128 pts (98 adults and 30 paediatric pts)	longitudinal, 5 yrs, minimum 4 samples/pt	46.1% at least one Af pos culture (only 4% ABPA in the population studied)
Hodson, 2002 [34]	secondary	UK/Ireland	42 (tobramycin) + 37 (colistin) pts ≥ 6 yrs	once at end of study	5.7% Af pos in tobramycin group 3.2% Af pos in colistin group
Bakare, 2003 [35]	primary	Germany	94 pts, median age 28 yrs	multiple, 6 mo study period	45.7% Af colonisation 24.5% had ≥ 2 Af positive cultures (no info if ABPA or sens)
Skov, 2005 [36]	primary	Australia	270 paediatric and adult pts	2 samples/yr 4 yr study period	Increase from 7.4% to 18.8% (based on single Af pos cultures) ABPA 0.3 to 4%
Chotirmall, 2008 [37]	primary	Irish	50 pts	during exacerbations 5 yrs study period	30% at least one Asp positive culture 20% > 1 Asp pos culture 4% ≥ 10 Asp pos culture 12% ABPA
Valenza, 2008 [38]	primary	Germany	60 adult and paediatric pts [median 18 yrs, 6 -41 yrs]	multiple samples 1 yr study period	58.3% <i>A. fumigatus</i> pos 10% non- <i>fumigatus Aspergillus</i> pos (based on single positive cultures)
Paugam, 2010 [39]	primary	France	201 adult pts	multiple samples 2 yrs study period	56.7% in total study population (based on one Af pos culture)

					28% age group 6-10 yrs 59% age group 11-15 yrs 75% age group 16-20 yrs 61% age group 21-41 yrs
Nagano, 2010 [40]	secondary	Ireland	77 adult pts, median 28.5 yrs [18-59 yrs]	once	9.1% all Asp species 5.2% <i>A. fumigatus</i> (no info ABPA or sens)
Jubin, 2010 [41]	primary	France	85 paediatric pts mean age 8.5 +/- 9 yrs	multiple at least once/yr 6 yrs study period	21% Asp colonisation 14% isolated persistent Asp colonisation 4% Asp colonisation + ABPA
Sudfeld, 2010 [42]	primary	US	614 pts	10 yr study period, cohort	36.3% <i>A. fumigatus</i> (single pos culture) 26.1% non- <i>fumigatus Aspergillus</i>
De Vrankrijker, 2011 [43]	primary	Netherlands	259 pts non-ABPA 106 pts 0-12 yrs 99 pts 13-24 yrs 54 pts ≥25 yrs	multiple in one yr	23.6% (>50% of cultures Af pos) 16.4% age group 0-12 yrs 54.1% age group 13-24 yrs 29.5% age group ≥ 25 yrs
Wainwright, 2011 [44]	secondary	Australia	153 pts, BAL fluid from children < 5 yrs	during pulmonary exacerbations	9% Asp colonisation/infection
Fillaux, 2012 [45]	primary	France	206 pts median age 16.3 yrs [range 9.8-23.6]	routine samples, median follow-up 3.6 yrs [range 2.1-8.7]	18% persistent carriage = 3 Af pos cultures in 6 mo (non-ABPA or sens) 62.1% at least one Af pos culture 27.1% persistent carriage period at least once
Güngör, 2013 [46]	primary	Turkey	48 pts, mean age 11.6 yrs [range 2-38 yrs]	at least 3 sputum/deep throat swab samples	10.4% one <i>A. fumigatus</i> pos culture 8.3% non- <i>fumigatus Aspergillus</i>

					(no info ABPA or sens)
Fillaux 2014 [47]	primary	France	117 paediatric pts median age 9.9 yrs [IQR 6.0-13.2] at end of study	routine 8 yrs period	38.5% (= 3 Af pos cultures in 6 mo) without sensitization
Masoud-Landgraf, 2014 [48]	secondary	Austria	113 pts, median 20.3 yrs [range 2-57]	multiple samples 1 yr study period	78.8% Af pos cultures (no info ABPA or sens)
Noni, 2015 [49]	primary	Greece	121 paediatric pts	routine	32.2% one Af pos culture 11.6% chronic colonisation
Ramsey, 2014 [6]	primary	Australia	56 infants ≤ 2yrs of age	3 BAL samples 2 yrs study period	12.5% Asp colonisation
Heltshe, 2015 [50]	secondary	USA	151 pts: 38 pts 6-11 yrs 32 pts 12-17 yrs 81 pts ≥18 yrs	3 cultures as per study protocol	~15% and ~7.5% Asp pos cultures before and after ivacaftor (no info ABPA or sens)
Saunders, 2016 [51]	primary	UK	45 children < 18 yrs of age	multiple	29% Af pos BAL culture 14% Af pos sputum 42% one Af pos culture 22% persistent colonisation
Mirkovic, 2016 [52]	primary	Ireland	48 pts	8 sputum samples 2 year period	60.9% in Af sens pts 24% in non-sens pts (at least one pos)
Gernez, 2016 [53]	primary	US & Ireland	48 and 26 adult pts	At least 2 pos sputum cultures within previous 2 yrs	US 27.1% Af pos Ireland 30.8% Af pos
Reece, 2017 [54]	primary	Ireland	CF registry	retrospective,	11% overall Af colonisation

			749 pts median 18.1 yrs [range 4-69]	1 yr study period	(5% persistent and 6% intermittent) ABPA 5.9%# ≤ 10 yrs of age: 0 – 10% 11-20 yrs of age: 10-30% 21-30 yrs: 7-18% ≥31 yrs: 0-18%
Brandt, 2018 [55]	primary	Germany	CF Registry 2599 pts (mean age 21 yrs +/- 12yrs)	1 yr study period	32.5% at least one Af pos culture/yr (no info if ABPA or sens)
Hong, 2018 [56]	primary	US	CF Foundation registry 16,095 pts (6 -45 yrs)	Retrospect 6 yrs study period at least 2 cultures/yr, Asp prevalent cases excluded	27.9% Asp pos overall 9.6% persistent Asp pos (≥2 pos cultures during 12 mo; of which 5.4% ABPA) 18.4% transient of which 3.4% ABPA
Coron, 2018 [57]	primary	France	243 pts > 6 yrs (mean age 21.2 +/- 8.7 yrs)	prospective, samples annually or during exacerbation 3 yr study period	35.4% one Af pos culture adults 35.6% children 34.8%

*based on sputum samples unless indicated otherwise; #patients intermittently or persistently colonised with *A. fumigatus* showed no increased prevalence of ABPA; Af, *Aspergillus fumigatus*; Asp, *Aspergillus* species; ABPA, allergic bronchopulmonary aspergillosis; sens, fungal sensitisation; pos, positive;