

Supplements:

Table S1: The impact of *A. fumigatus* colonization adopting four different definition criteria on lung function over five different time ranges.

Predictor	The year of detection	One year after detection	Two years after detection	Two years in a row	Three years in a row
<i>A. fumigatus</i> ≥ 1 at a given year (n=77)	0.988 (0.965; 1.011)	0.968 (0.937; 1.000) [†]	0.997 (0.970; 1.024)	0.957 (0.919; 0.996)*	0.921 (0.869; 0.977)**
<i>A. fumigatus</i> ≥ 2 at a given year (n=43)	0.984 (0.953; 1.017)	0.970 (0.933; 1.009)	0.979 (0.937; 1.023)	NA ^a	NA ^a
Leeds, Intermittent (n=60)	0.955 (0.918; 0.992)*	0.991 (0.948; 1.035)	1.008 (0.958; 1.060)	0.978 (0.899; 1.064)	0.965 (0.867; 1.073) ^b
Leeds, Chronic (n=60)	0.978 (0.926; 1.033)	0.941 (0.877; 1.008)	0.979 (0.919; 1.043)	0.959 (0.868; 1.060)	0.900 (0.773; 1.046)

[†] $p < .10$, * $p < .05$, ** $p < .01$

^a NA=not applicable

^b Three years in a row with at least intermittent colonization but not three years in a row with chronic colonization.

Effects (ratios, with 95% CI) of the presence of *A. fumigatus* ≥ 1 and ≥ 2 at a given year as well as the chronic and intermittent colonization by Leeds on ppFEV1, separately for five different time ranges.

Leeds criteria are for *P. aeruginosa* in CF patients and define chronic colonization as >50% positive sputum cultures and intermittent colonization as $\leq 50\%$ positive sputum cultures in the last 12 months with a minimum of four cultures per patient and year

The effects are calculated within individuals and adjusted for the quadratic association with age.

A significant decrease in lung function with 4.5 % was detected the same year of acquisition only in CF patients with intermittent colonization by Leeds. However, CF patients chronically colonized by Leeds three years in a row did not associate with a

significant decrease in lung function, these associations were the strongest in absolute terms.

Table S2: Possible parameters that may predict the impact of *A. fumigatus* on lung function adopting different definitions.

Parameters	The year of detection	One year after detection	Two years after detection	Two years in a row	Three years in a row
<i>A. fumigatus</i> ≥ 2 at a given year					
Age	0.999	0.999	0.999	NA	0.999
Gender	0.974	0.937	0.976	NA	1.031
Genotype 1 ^a	1.013	1.099	1.038	NA	1.11
Genotype 2 ^b	1.008	1.028	1.018	NA	0.903
Pancreas insufficiency	1.08	1.115	1.159	NA	0.973
Diabetes 1 ^c	1.034	0.925	1.014	NA	0.857
Diabetes 2 ^d	1.167	1.437	1.258	NA	0.894
Number of iv ^e antibiotic treatments	0.963	0.925	0.953	NA	0.964
25 hydroxy vitamin D	1.001	1.002*	1.001	NA	1.001
BMI (adults)	1.021	1.077	0.95	NA	0.903
ESR ^f	0.999	0.999	1	NA	1.005+
IgG	1.003	0.991	0.996	NA	1.005
Co-colonization with <i>C. dubliniensis</i>	0.982	1.008	1.092	NA	1.031
Co-colonization with <i>C. albicans</i>	1.03	1.015	1.065+	NA	1.043

Co-colonization with <i>P. aeruginosa</i>	1.073*	1.000	1.011	NA	1.104
Leeds, Intermittent					
Age	0.999	0.999	0.996†	1	0.99*
Gender	0.915	0.954	1.019	0.999	1.089
Genotype 1 ^a	1.13	1.052	1.094	1.157	1.202
Genotype 2 ^b	1.06	0.851	0.962	0.909	0.814
Pancreas insufficiency	0.887	0.706	0.801	0.918	0.979
Diabetes 1 ^c	0.994	0.977	0.994	0.851	0.739*
Diabetes 2 ^d	1.384	0.93	1.089	NA	NA
Number of iv ^e antibiotic treatments	1.147	1.086	1.104	1.271	1.192
25 hydroxy vitamin D	1.002	1.001	1.002	1.002	1.004†
BMI (adults)	0.888†	1.271	0.979	0.963	0.888
ESR ^f	1.003	0.996	0.995	1.006	1.005
IgG	1.016†	0.999	0.983	0.997	0.998
Co-colonization with <i>C. dubliniensis</i>	1.028	0.997	0.997	0.924	0.618
Co-colonization with <i>C. albicans</i>	1.055	1.076	1.134	1.056	1.114
Co-colonization with <i>P. aeruginosa</i>	1.059	0.921	1.040	0.971	1.389*
Leeds, Chronic					
Age	1.001	1.001	0.997	0.998	0.994
Gender	1.048	1.041	1.039	1.205	1.628
Genotype 1 ^a	1.122	1.083	0.993	1.179	0.274

Genotype 2 ^b	0.899	0.94	0.872	0.822	0.229
Pancreas insufficiency	1.023	1.044	0.94	1.127	NA
Diabetes 1 ^c	0.927	0.933	0.908	0.968	0.526
Diabetes 2 ^d	NA	NA	NA	NA	NA
Number of iv ^e antibiotic treatments	1.118	0.999	0.965	0.954	0.784
25 hydroxy vitamin D	1.002	1	1.002	1.005†	NA
BMI (adults)	1.129	1.536*	NA	NA	NA
ESR ^f	1.001	1.004	1.005	1	0.965
IgG	1.005	0.986†	0.998	1	0.999
Co-colonization with <i>C. dubliniensis</i>	0.922	0.875	1.023	0.556	0.485
Co-colonization with <i>C. albicans</i>	1.064	1.088	1.104	1.39**	1.626**
Co-colonization with <i>P. aeruginosa</i>	1.180**	1.191**	1.094	1.432†	1.794**

† $p < .10$, * $p < .05$, ** $p < .01$

^a F508del homozygotes, ^b F508del heterozygotes, ^c Insulin treated diabetes mellitus, ^d Diet treated diabetes mellitus, ^e intravenous, ^f erythrocyte sedimentation rate.

Co-colonization with *P. aeruginosa*, *C. albicans*, higher BMI in adults, higher 25-hydroxy vitamin D and F508del heterozygosity showed to be protective against the negative association of *A. fumigatus* colonization on lung function (OR >1). In contrary, increasing age and insulin treated CFRD were associated with a promotion of the predicted negative effect (OR <1)