

ONLINE SUPPLEMENT

HEPA filtration improves asthma control in children exposed to traffic-related airborne particles

Christine James MD¹, David I. Bernstein MD¹, Jennie Cox PhD², Patrick Ryan PhD³, Christopher Wolfe MS³, Roman Jandarov PhD², Nicholas Newman DO³, Reshmi Indugula MS², Tiina Reponen PhD²

¹Department of Internal Medicine, Division of Immunology, Rheumatology, and Allergy,
University of Cincinnati College of Medicine, Cincinnati, OH, USA

²Department of Environmental Health, University of Cincinnati, Cincinnati, OH, USA

³Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

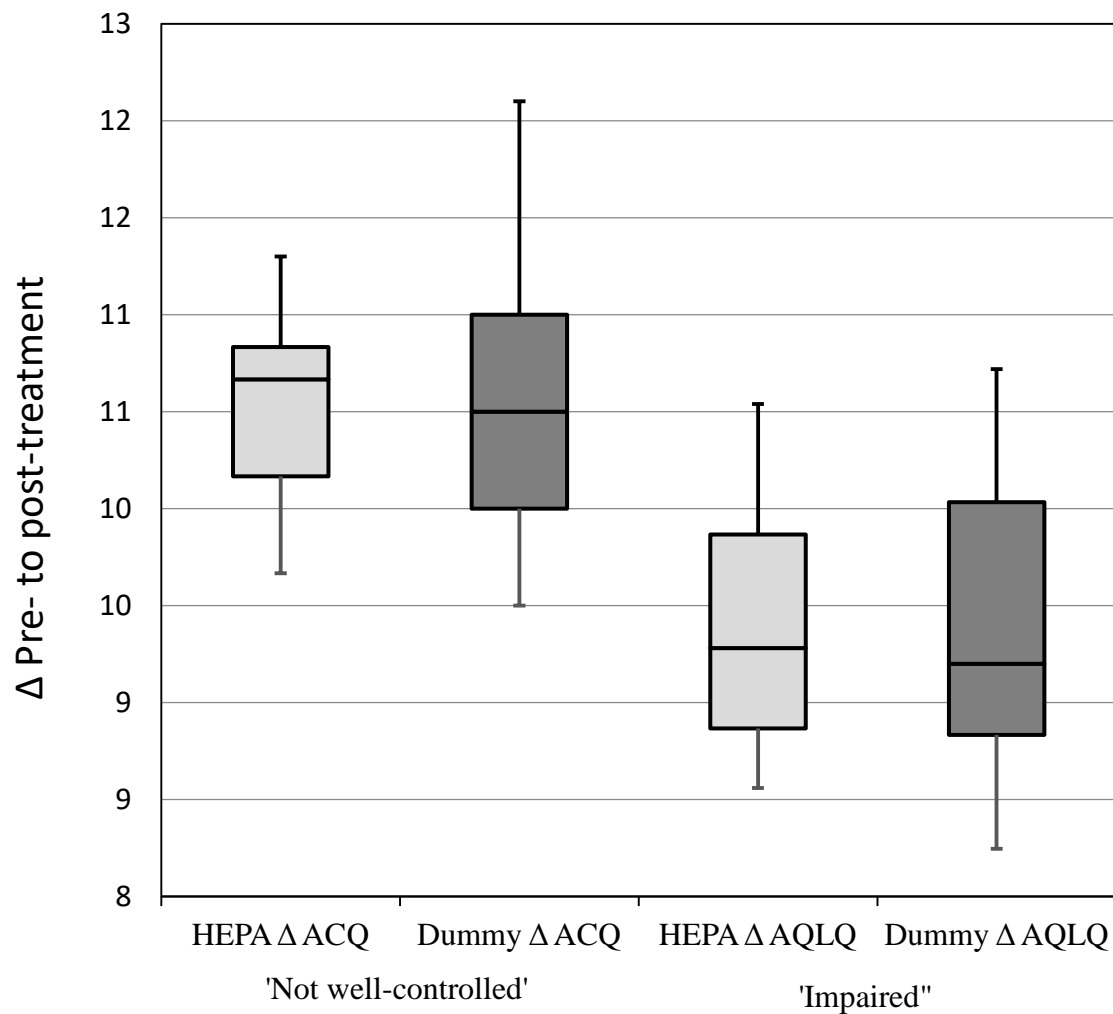


Figure S1. Changes between pre- to post-treatment in ‘not well-controlled’ ACQ scores and ‘impaired’ quality of life AQLQ scores for HEPA and ‘dummy’ treatments (HEPA ACQ n=20; Dummy ACQ n=19; HEPA AQLQ n=13; Dummy AQLQ n=10). Horizontal lines in the box plots represent the minimum, 25%, 50%, 75% percentiles, and maximum. ACQ - asthma control questionnaire; AQLQ - asthma quality of life questionnaire. **Due to Bonferroni adjustment, p-value <0.025 was considered significant for Mann-Whitney test

Table S1. Wilcoxon signed rank test for median baseline and treatments for 'not well-controlled' and 'impaired' quality of life

'Not well-controlled' asthma (ACQ)	HEPA	Dummy	'Impaired' quality of life (AQLQ)	HEPA	Dummy
	p-value	p-value		p-value	p-value
Smoking in home (n=5/6)§	0.44	0.16	Smoking in home (n=3)	0.25	0.25
No smoking in home (n=15/13)	0.0047*	0.074	No smoking in home (n=10/7)	0.064	0.50
Male (n=13/12)	p=0.0017*	0.023*	Male (n=9/5)	0.0039*	0.11
Female (n=7)	p=0.83	0.50	Female (n=4/5)	0.88	0.50
Inhaled corticosteroids (n=8/7)	0.0078*	0.21	Inhaled corticosteroids (n=7/4)	0.022*	0.18
No inhaled corticosteroids (n=12)	0.083	0.074	No inhaled corticosteroids (n=6)	0.31	0.50
Allergy medicine (n=5/6)	0.063	0.21	Allergy medicine (n=5/2)	0.058	1.00
No allergy medicine (n=15/13)	0.022*	0.064	No allergy medicine (n=8)	0.20	0.092

§number of homes for HEPA/Dummy *p-value<0.025; ACQ - asthma control questionnaire; AQLQ - asthma quality of life questionnaire

Table S2. Average and range of ACQ and AQLQ during each season and Kruskal-Wallis rank sum test

	Spring	Summer	Fall	Winter	p-value
ACQ (n=21/23/19/21)	0.60 (0.00-1.67)	0.65 (0.00-2.00)	0.68 (0.00-1.83)	0.78 (0.00-2.00)	0.74
'Not well-controlled' ACQ (n=11/9/11/8)	0.83 (0.00-1.67)	1.15 (0.17-2.00)	0.91 (.33-1.83)	1.17 (0.00-2.00)	0.41
AQLQ (n=20/23/19/22)	6.20 (4.93-7.00)	5.98 (3.50-7.00)	6.23 (4.00-7.00)	6.09 (2.93-6.87)	0.96
'Impaired' AQLQ (n=4/6/6/7)	5.53 (5.33-5.93)	4.68 (3.50-6.27)	5.57 (4.00-6.40)	5.32 (2.93-6.67)	0.37

**p-value<0.0125; ACQ - asthma control questionnaire; AQLQ - asthma quality of life questionnaire