

- 1 **Supplementary Table 1:** Rate ratios for treatment failures and exacerbations for low vs. high income
2 Groups
3 **Model 1:** adjusted for treatment regimen (vitamin D vs. placebo), study site, race and BMI
4 **Model 2:** adjusted for same covariates as Model 1, and for ethnicity and household size
5 **Model 3:** adjusted for same covariates as Model 2, and for baseline %predicted FEV₁ and max
6 bronchodilator response to albuterol
7 **Model 4:** adjusted for same covariates as Model 2, and for hospitalization rate in the year prior to enrollment.
8 **Model 5:** adjusted for same covariates as Model 2, and for second hand smoke exposure in the household.
9 **Model 6:** adjusted for same covariates as Model 2, and for household education and perceived stress.
10 **Model 7:** adjusted for same covariates as Model 2, and for age and gender.
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12 **Supplementary Table 2:** Treatment failure rate by race, stratified by income level, with adjustment for
13 **study site, race, BMI, and treatment**
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15 **Supplementary Table 3:** Demographic, clinical and phenotypic characteristics by income level
16 ^C N (%), Chi-square test
17 ^F N (%), Fisher's Exact test
18 ^T Mean (SD), T-test
19 ^W Median (IQR), Wilcoxon rank-sum test
20 ^{TL} Geometric mean (CV), T-test on log scale
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Supplementary Table 1

Model	Outcome	Group Comparison	Poisson Regression Rate Ratio (95% CI)	P-value
1	Treatment Failures	Low vs. High income groups	1.5 (1.0—2.2)	0.03
	Exacerbations	Low vs. High income groups	1.8 (1.1—3.1)	0.03
2	Treatment Failures	Low vs. High income groups	1.5 (1.1—2.3)	0.03
	Exacerbations	Low vs. High income groups	1.9 (1.1—3.3)	0.02
3	Treatment Failures	Low vs. High income groups	1.5 (1.0—2.2)	0.04
	Exacerbations	Low vs. High income groups	1.8 (1.0—3.2)	0.04
4	Treatment Failures	Low vs. High income groups	1.5 (1.0—2.2)	0.04
	Exacerbations	Low vs. High income groups	1.8 (1.0—3.2)	0.04
5	Treatment Failures	Low vs. High income groups	1.6 (1.1—2.3)	0.02
	Exacerbations	Low vs. High income groups	2.0 (1.1—3.4)	0.02
6	Treatment Failures	Low vs. High income groups	1.6 (1.0—2.3)	0.03
	Exacerbations	Low vs. High income groups	2.1 (1.1—3.8)	0.02
7	Treatment Failures	Low vs. High income groups	1.6 (1.1—2.3)	0.03
	Exacerbations	Low vs. High income groups	1.9 (1.1—3.3)	0.02

Supplementary Table 2

Outcome	Race	Income Level	Treatment failures (per person-year (95%CI))	Test of race by income interaction (P-value)
Treatment failures	Black	Low	1.17 (0.81, 1.68)	0.72
		High	0.71 (0.37, 1.34)	
	Non-Black	Low	0.69 (0.50, 0.97)	
		High	0.49 (0.34, 0.70)	
Exacerbations	Black	Low	0.46 (0.27, 0.77)	0.99
		High	0.25 (0.10, 0.64)	
	Non-Black	Low	0.43 (0.28, 0.66)	
		High	0.23 (0.14, 0.39)	

Supplementary Table 3

CHARACTERISTICS	Low income (n=207)	High income (n=174)	P-value
Age ^T	40.1 (12.6)	39.7 (12.8)	0.76
Gender (M) ^C	49 (23.7%)	74 (42.5%)	<0.01
Race ^F			<0.01
American Indian/Alaskan Native	0 (0.0%)	1 (0.6%)	
Asian and Pacific Islander	4 (1.9%)	9 (5.2%)	
Black	91 (44.0%)	32 (18.4%)	
White	90 (43.5%)	113 (64.9%)	
Hispanic	19 (9.2%)	17 (9.8%)	
Other	3 (1.4%)	2 (1.1%)	
Ethnicity (Hispanic or Latino) ^C	22 (10.6%)	20 (11.5%)	0.79
Household Educational level (< Bachelor's Degree) ^C	112 (54.4%)	40 (23.1%)	<0.0001
Perceived Stress Level (≥ 20) ^C	43 (21%)	22 (12.6%)	0.04
BMI (kg/m ²) ^T	33.3 (10.2)	30.3 (6.7)	<0.01
Baseline Vitamin D level ^T	18.2 (7.1)	19.4 (6.4)	0.09
Attained sufficient Vitamin D level ^C	86 (44.3%)	76 (46.1%)	0.74
Second hand smoke exposure in the household ^C	20 (9.7%)	8 (4.6%)	0.06
<i>Clinical history in the year prior to enrollment:</i>			
ED/unscheduled office visit ^C	76 (36.7%)	56 (32.2%)	0.35
Hospitalizations ^C	15 (7.2%)	4 (2.3%)	0.03
Missed work/school (0 / 1-7 / >7 days) ^C	116 (56%) / 60 (29.0%) / 31 (15.0%)	108 (62.4%) / 46 (26.6%) / 19 (11.0%)	0.37
<i>Controller medications</i>			
LTRA or 5-LO inhibitor use ^C	44 (21.4%)	49 (28.2%)	0.12
Inhaled corticosteroids ^C	94 (45.4%)	67 (38.5%)	0.17
Inhaled + long acting bronchodilator ^C	130 (62.8%)	108 (62.4%)	0.94
<i>Asthma control</i>			
Asthma symptom Utility index score ^T	0.82 (0.13)	0.83 (0.11)	0.41
ACT score ^T	18.8 (3.6)	19.5 (2.8)	0.03
<i>Spirometric and physiological studies</i>			
Pre-bronchodilator FEV1 at baseline (%predicted) ^T	79.9 (13.9)	81.6 (13.5)	0.23
Bronchodilator response-	15.4 (11.6)	13.2 (8.1)	0.03

-reversibility with 4 puffs of albuterol (% change) at baseline ^T			
Methacholine PC20 (mg/mL) ^{TL}	1.8 (1.6)	2.1 (1.7)	0.35
Sputum eosinophils (%) ^W	0.4 (1.4)	0.3 (1.0)	0.42
<i>Sensitization to aeroallergens</i>			
Cockroach ^C	51 (25.8%)	32 (19.4%)	0.15
Cat ^C	97 (49.2%)	79 (47.9%)	0.80
Dog ^C	56 (28.4%)	49 (29.7%)	0.79
Rat ^C	44 (22.2%)	38 (23.0%)	0.85
Mouse ^C	60 (30.3%)	60 (36.4%)	0.22
Dust mites ^C	97 (49.2%)	88 (53.3%)	0.44
Mold ^C	49 (24.7%)	42 (25.5%)	0.88
Tree mix ^C	49 (24.7%)	48 (29.1%)	0.35
Grass mix ^C	92 (46.5%)	77 (46.7%)	0.97
Weed mix ^C	82 (41.4%)	76 (46.1%)	0.37