Supplementary Table 1. Characteristics of the SAC Study population, stratified by whether FeNO was obtained

Variable	Without FeNO (N=57)	With FeNO (N=131)	P Value
Age (years)	6.7	10.6	<0.001
WBC	12.4	12.0	0.49
Hb (g/dL)	8.2	8.3	0.53
Reticulocyte (%)	11.2	11.0	0.80
Eosinophil (median)	2.5	3.0	0.87
IgE (median)	69.6	49.6	0.60
Male (%)	50.9	55.0	0.61
Maternal history of asthma (%)	23.2	10.3	0.02
History of inhaled corticosteroid use (ever) (%)	14.0	20.6	0.29
History of hydroxyurea use (ever) (%)	38.6	32.8	0.44
History of wheezing leading to shortness of breath (%)	28.1	24.4	0.60
History of asthma (%)	28.1	29.0	0.90
Rate of ACS prior to baseline (median) (%)	.20	.12	0.10
Rate of pain prior to baseline (median) (%)	.14	.29	0.03
Prospective rate of ACS after baseline (median) (%)	.00	.00	0.42
Prospective rate of pain after baseline (median) (%)	.14	.49	<0.01

Abbreviations: SAC: Sleep and Asthma Cohort; FeNO: exhaled nitric oxide; FVC: forced vital capacity; FEV_1=forced expiratory volume in 1 second; WBC=white blood cell count; Hb = hemoglobin; ACS=acute chest syndrome

Supplementary Table 2. Associations between FeNO and Participant Characteristics, Stratified by Asthma Status

Categorical variables									
	All subjects N=131			No Asthma N=93			Has Asthma N=38		
	Median FeNO			Median FeNO			Median FeNO		
Covariate	No	Yes	P value[a]	No	Yes	P value	No	Yes	P value
Male gender	8.4	10.3	0.11	8.3	9.9	0.13	8.6	11.2	0.63
Parent has asthma	8.7	10.6	0.14	8.3	11.8	<0.05	9.9	8.7	0.65
Participant has asthma	8.9	9.9	0.60						
On hydroxyurea at the time of FeNO	8.7	11.4	0.06	8.7	18.2	0.16	9.2	11.4	0.65
On inhaled corticosteroids at the time of FeNO	8.8	11.7	0.25	8.9	8.4	0.62	9.0	17.4	0.05
Has ≥12% improvement in FEV_1 after bronchodilator	9.0	10.0	0.50	9.0	6.9	0.34	9.0	17.4	0.05
Had 2 more positive skin tests (N=121)	8.3	12.4	0.001	8.1	11.8	0.01	8.8	12.6	0.03
Wheeze with cold	8.7	10.0	0.22	8.9	8.2	0.98	9.1	11.4	0.28
Wheeze without cold	9.0	10.4	0.30	9.8	7.8	0.14	7.9	12.5	0.07
Wheeze with SOB	9.0	9.4	0.70	8.9	8.0	0.58	8.4	11.2	0.29
Wheeze after exercise	8.9	9.8	0.66	9.4	8.7	0.43	11.8	9.2	0.47
Had an ACS event prior to 4 years of age	9.8	9.0	0.45	8.1	10.1	0.28	13.3	8.7	0.12
Had a pain event prior to 4 years of age	8.9	9.6	0.95	8.3	9.9	0.13	8.6	11.2	0.63

Continuous Variables						
	All subjects		No Asthma		Has Asthma	
Covariate	ρ[b]	P value	ρ	P value	ρ	P value
Age	.28	0.001	.27	0.009	.31	0.06

Height	.34	<0.001	.30	0.004	.43	0.007
FEV$_1$% predicted	-.07	0.46	-.10	0.33	.02	0.89
FVC% predicted	-.04	0.63	-.11	0.31	.07	0.67
FEV$_1$/FVC (actual)	-.09	0.32	-.01	0.90	-.23	0.17
FEV$_1$/FVC (% predicted)	.00	0.95	.05	0.62	-.08	0.65
IgE	.28	0.001	.25	0.02	.37	0.02
Eosinophils, total no. of cells/cu.mm	.20	0.02	.18	0.08	.23	0.17
White blood cell count	-.08	0.35	-.07	0.51	-.11	0.51
Hemoglobin (g/dL)	.02	0.84	.15	0.16	-.25	0.13
Retrospective rate of ACS prior to FeNO	-.03	0.78	-.02	0.84	-.17	0.32
Retrospective rate of pain prior to FeNO	-.03	0.76	.05	0.62	-.18	0.27
Prospective rate of ACS after FeNO	.07	0.42	.07	0.53	.03	0.87
Prospective rate of pain after FeNO	.01	0.87	-.02	0.82	.04	0.79

Abbreviations: FeNO=exhaled nitric oxide; ppb=parts per billion; FVC=forced vital capacity; FEV$_1$=forced expiratory volume in 1 second; ACS=acute chest syndrome

[a]Wilcoxon rank sum P value

[b]Spearman correlation coefficient

Supplementary Table 3. Multivariable model of factors associated with (ln)FeNO among children with SCA, stratified by asthma status				
	No Asthma		**Asthma**	
Covariates	**β Estimate (SE)**	**P value**	**β Estimate (SE)**	**P value**
Male gender	0.24 (0.13)	0.07	-0.02 (0.23)	0.94
White blood cell count	-0.02 (0.02)	0.15	-0.03 (0.04)	0.50
(ln) IgE	0.10 (0.04)	0.03	0.15 (0.07)	0.03
Eosinophils (quartile 1 = reference)				
Quartile 2	0.03 (0.17)	0.88	-0.69 (0.35)	0.05
Quartile 3	0.35 (0.19)	0.07	-0.45 (0.27)	0.10
Quartile 4	0.45 (0.18)	0.01	-0.17 (0.34)	0.61
History of wheezing that caused shortness of breath	-0.40 (0.18)	0.03	0.19 (0.24)	0.42

ACS episode prior to 4 years of age	-0.07 (0.15)	0.63	-0.26 (0.20)	0.22

Abbreviations: FeNO=exhaled nitric oxide; SCA= sickle cell anemia; SE=standard error; ACS=acute chest syndrome

Supplementary Table 3. Multivariable model of prospective rates of ACS in Children with SCA, stratified by Asthma Status

Covariate	No Asthma			Has Asthma		
	IRR	95% CI	P value	IRR	95% CI	P value
ln (FeNO):	1.64	1.06-2.54	0.03	1.24	0.80-1.93	0.34
Male gender	0.56	0.30-1.05	0.07	0.61	0.31-1.20	0.15
History of wheezing causing shortness of breath	2.42	1.06-5.49	0.04	2.02	1.13-3.62	0.02
ACS episode prior to age 4 years	1.71	0.92-3.18	0.03	5.52	2.85-10.71	<0.001

Abbreviations: ACS=acute chest syndrome ; SCA=sickle cell anemia; IRR=incidence rate ratio; CI=confidence interval; FeNO=exhaled nitric oxide; SCA= sickle cell anemia; SE=standard error;

[a]Negative Binomial regression models with adjustment for over-dispersion, using robust standard errors. Two-tailed significance values.