ONLINE REPOSITORY

DEFINITION OF THE STUDY'S EXPLORATORY OUTCOME

ICS dose-reduction failure was algorithmically defined as either an increase in "daily rescue inhaler use" or in "peak flow variability," or experiencing a VIDA-protocol—defined treatment failure. The VIDA trial defined treatment failure as "1 or more of the following: peak expiratory flow of 65% or less of baseline measurement on 2 of 3 consecutive measurements; FEV_1 of 80% or less of baseline measurement on 2 consecutive measurements; increase in levalbuterol dose of 8 puffs/d or more for 48 hours (vs baseline); additional use of inhaled corticosteroids or use of oral or parenteral corticosteroids for asthma; emergency department or hospitalization for asthma with systemic corticosteroid use; participant lack of satisfaction with treatment; and physician clinical judgment for safety reasons."

We then added 3 additional parameters to the definition of ICS reduction failure: decrease in "rescue-free days," increase in "rescue inhaler use," and increase in "peak flow variability," and defined them using data from the first 50% taper phase. We used those data to look at the distribution of the changes in these measures and choose a cutoff point for each one on the basis of upper and lower limits of the 95% CIs of the mean changes. This process resulted in defining a 3% decrease in rescue-free days; an increase of 32% in rescue inhaler use, and an increase of 17% in peak flow variability, in the definition of taper failure, along with occurrence of "treatment failure."

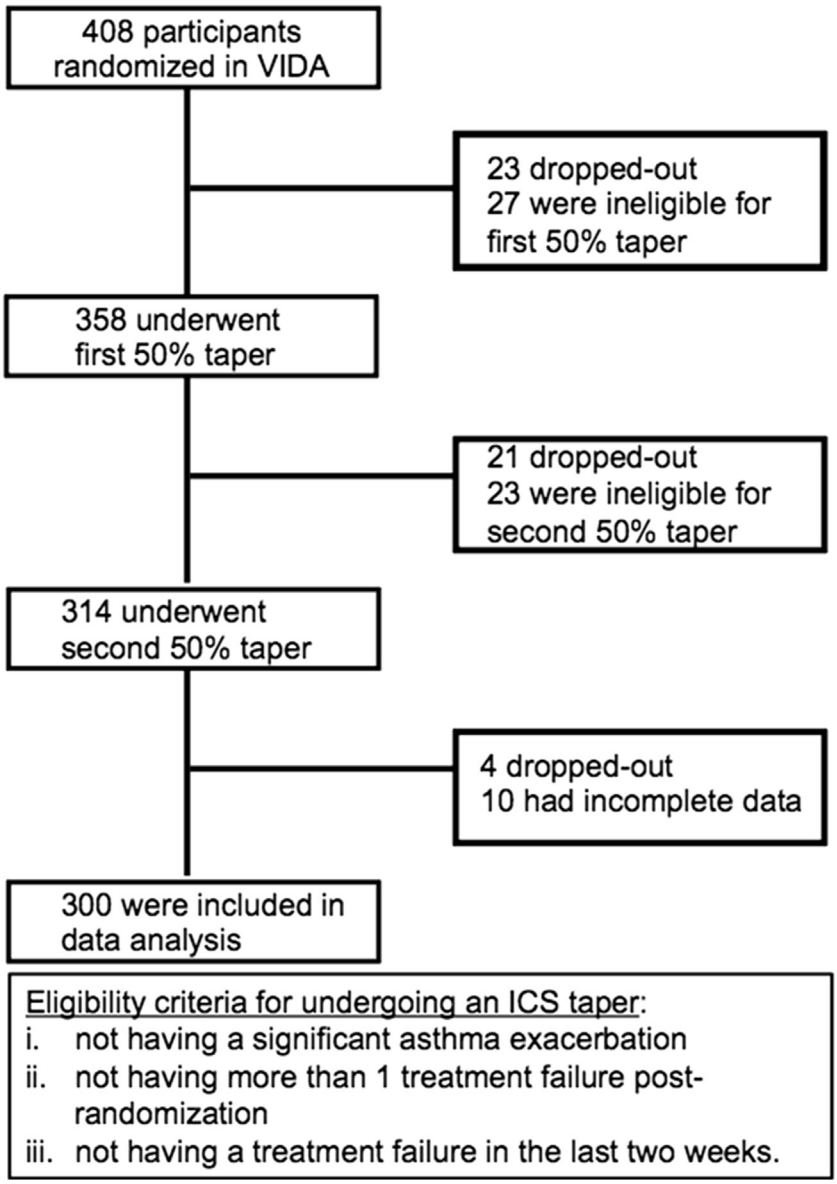

FIGURE E1. Flow diagram of participants randomized into the VIDA trial and included in this study.

TABLE E1. Subject characteristics at baseline

Characteristics	Placebo (n = 147)	Vitamin D (N = 153)
Demographic characteristics		
Age (y), mean ± SD	39.7 ± 12.7	39.7 ± 12.6
Male*	51 (34.7)	53 (34.6)
Race/ethnicity*		
American Indian/American Native	0 (0.0)	2 (1.3)
Asian and Pacific Islander	4 (2.7)	6 (3.9)
Black	44 (29.9)	49 (32.0)
White	84 (57.1)	80 (52.3)
Hispanic	14 (9.5)	14 (9.2)
Other	1 (0.7)	2 (1.3)
Household income (<$50,000/y)*	71 (52.6)	74 (51.7)
Clinical characteristics		
Obesity (BMI >30)*	62 (42.2)	82 (53.6)
Hip circumference, mean ± SD	112.23 ± 18.90	113.43 ± 16.69
Waist circumference, mean ± SD	98.41 ± 20.05	99.18 ± 18.63
GERD*	32 (22.4)	36 (24.5)
Nasal polyposis*	14 (10.1)	10 (6.8)
Sleep apnea*	9 (6.1)	10 (6.5)
Smoking history (pack-years), mean ± SD	0 ± 0	0 ± 0
Age of asthma onset*†	84 (55.3)	81 (50.6)
Duration of asthma (y), mean ± SD	24.7 ± 12.9	24.5 ± 13.9
Clinical asthma history in the year before enrollment‡		
ED/unscheduled office visit*	41 (27.9)	56 (36.6)
Hospitalizations*	6 (4.1)	4 (2.6)
Corticosteroid use*		
Systemic corticosteroids (oral, IV, IM)	38 (25.9)	47 (30.7)
Inhaled	62 (42.2)	75 (49.0)
Inhaled + LABA	93 (63.3)	87 (57.2)
Asthma control§		
ACT score	20 (17-22)	19 (17-22)
Asthma phenotyping and physiological tests		
Change in FEV_1 with prednisone (>5%)*	24 (18.9)	21 (16.4)
ΔFEV_1 ≥12% with 4 puffs of albuterol*	79 (54.5)	84 (54.9)
Methacholine PC_{20}§	1.74 (0.54-4.71)	1.70 (0.76-4.70)
Sputum inflammatory cells§		
Eosinophils	0.50 (0.00-1.60)	0.20 (0.00-1.30)
Neutrophils	40.30 (20.60-55.80)	41.05 (19.00- 58.90)
Macrophages	35.80 (24.30-48.20)	32.80 (19.90- 51.40)
Lymphocytes	0.60 (0.00-1.40)	0.45 (0.00-1.25)

ACT, Asthma Control Test; *BMI*, body mass index; *ED*, emergency department; *GERD*, gastroesophageal reflux disease; *IQR*, interquartile range; *LABA*, long-acting beta-agonist; *MCh*, methacholine challenge.
*Count (percent total).
†Asthma onset before age 10 y.
‡Used at any point in the year before enrollment, with overlap between individuals who used "Inhaled" and "Inhaled + LABA."
§Median (IQR).