

Systemic Corticosteroid Stewardship

Optimizing asthma treatment to minimize risks associated with systemic corticosteroid exposure



Call to ACTION



There is a need to help **protect patients** from potential **overexposure to SCS**¹

Inappropriate SCS use is associated with **serious AEs and increased healthcare utilization**²⁻⁴

Rescue therapy overuse is an indicator of **inadequate symptom control** on maintenance therapy, leaving patients **at risk of exacerbation and exposure to SCS**^{5,6}



Other therapeutic options are available and may help to minimize exposure to SCS^{7,8}

SCS stewardship and **SCS-sparing strategies** may reduce SCS reliance⁹⁻¹²

Cumulative exposure and increasing doses of SCS have been shown to increase the risk of AEs

Multiple acute bursts of SCS can result in a cumulative steroid burden, associated with increased health risks^{1,12-15}

Likelihood of AEs by cumulative SCS dose (mg)		 T2D/ metabolic	 Depression/ anxiety	 CVD/ hypertension	 Pneumonia/ infections	 Osteoporosis
Asthma ^{2*}	500-<1000	1.2×	1.2×	-	-	-
	1000-<2500	1.4×	1.3×	1.4×	1.7×	1.9×
COPD ^{13†}	500-<1000	1.2×	1.1×	1.0×	1.2×	1.5×
	1000-<2500	1.4×	1.3×	1.3×	1.7×	1.9×
Likelihood of AEs by number of Rx in 12 months						
CRSwNP ^{14‡}	1-3 SCS Rx	-	1.2×	1.0×	1.6×	1.2×
	≥4 SCS Rx	-	1.4×	1.2×	3.0×	1.4×
EGPA: percentage of AE occurrence by cumulative SCS dose (mg) [§]						
EGPA ^{15¶}	5700	38%	7%	28%	21%	17%



22.5%

of US patients with GINA Step 4/5 treatment (medium- or high-dose ICS/LABA) received ≥2 prescription fills for SCS in 12 months¹⁶⁻¹⁸

Days	Burst 1, mg			Burst 2, mg			Burst 3, mg		
	40	50	60	40	50	60	40	50	60
3	120	150	180	240	300	360	360	450	540
4	160	200	240	320	400	480	480	600	720
5	200	250	300	400	500	600	600	750	900
6	240	300	360	480	600	720	720	900	1080
7	280	350	420	560	700	840	840	950	1260
8	320	400	480	640	800	960	960	1200	1440
9	360	450	540	720	900	1080 mg	1080	1350	1620
10	400	500	600	800	1000	1200 mg	1200	1500	1800

 Below the **lifetime high-risk SCS exposure threshold**

 ≥500 mg cumulative SCS increases the risk of T2D and depression/anxiety

 ≥1000 mg cumulative SCS increases the risk of renal impairment, cataracts, cardiovascular disease, pneumonia, and osteoporosis

Patients with severe asthma who received daily SCS (≥5 mg/day) saw increased risks of inpatient and emergency room visits¹⁹



Risk of inpatient visits

HR 2.4

5-10mg/day

HR 3.37

>10mg/day



Risk of emergency room visits

HR 1.78

5-10mg/day

HR 2.17

>10mg/day

SCS use is only recommended in some patients

SCS can improve asthma symptoms and are recommended in some patients in short courses (40-50 mg/day for 7-10 days)^{16,17}



Multiple intermittent bursts or chronic use increase the risks of AEs or comorbidities^{1,12-15}



SCS refers to both oral- and injection-/infusion-based corticosteroid delivery; *estimated cumulative exposure of SCS as prednisone-equivalent doses; †prescriptions for OCS during observation period (oral prednisolone); ‡prescriptions for or administration of oral or injectable SCS; §cumulative SCS dose in patients with active disease. Total cumulative SCS dose was the sum of all prednisone-equivalent doses over the entirety of the disease; ¶138 patients with ANCA-associated vasculitides were recruited (granulomatosis with polyangiitis [51.4%], microscopic polyangiitis [18.1%], and EGPA [30.4%]). All values are for patients with active disease (n=29) and demonstrate maximum percentage occurrence of AEs; ||a 'burst' of SCS was considered to be a dosing range of 40-60 mg daily for 3-10 days, as recommended in GINA and NHLBI. 16,17 ACQ-6, Asthma Control Questionnaire-6; AE, adverse event; AIRQ, Asthma Impairment and Risk Questionnaire; ANCA, antineutrophil cytoplasmic antibodies; BD, bronchodilator; Bx, biologics; COPD, chronic obstructive pulmonary disease; CRSwNP, chronic rhinosinusitis with nasal polyps; CVD, cardiovascular disease; EGPA, eosinophilic granulomatosis with polyangiitis; EMR, electronic medical record; FEV₁, forced expiratory volume in 1 second; GINA, Global Initiative for Asthma; HR, hazard ratio; ICS, inhaled corticosteroid(s); LABA, long-acting β₂-agonist; NHLBI, National Heart, Lung, and Blood Institute; OCS, oral corticosteroid(s); OR, odds ratio; Peds-AIRQ, Pediatric Asthma Impairment and Risk Questionnaire; Rx, prescription(s); SABA, short-acting β₂-agonist; SCS, systemic corticosteroid(s); T2D, type 2 diabetes.

Systemic Corticosteroid Stewardship

Strategies

The ultimate treatment goal is to eliminate the need for SCS in all patients²⁰

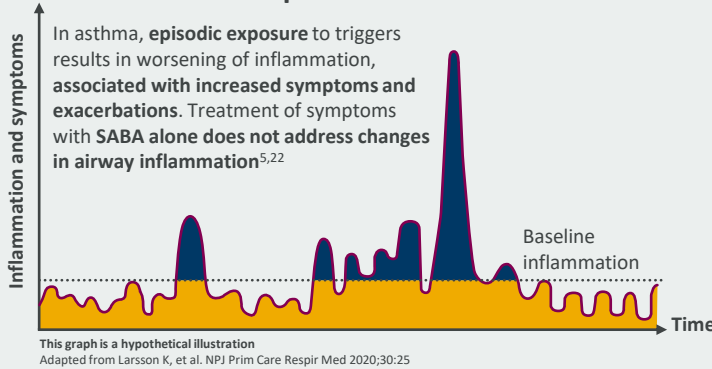
DEFINITION OF ON-TREATMENT CLINICAL REMISSION IN ASTHMA*

... No systemic corticosteroid use for **asthma or significant asthma flares requiring physician intervention** should be allowed²⁰

On-treatment clinical remission criteria²¹



Optimize rescue and maintenance therapies as SCS sparing approaches



There may be a 'window of opportunity' to address the increasing airway inflammation and underlying symptoms before an exacerbation occurs; thereby, reducing rescue therapy use²²

Biologic initiation is associated with significant reduction in SCS use in severe asthma²³

		Probability [95% CI] Bx	Probability [95% CI] Non-Bx	OR of Bx initiator vs non initiator	OR [95% CI] Bx vs Non-Bx
Low dose (0-5 mg)	1st year	0.70 [0.68, 0.72]	0.63 [0.62, 0.65]		1.62 [1.40, 1.86]**
	2nd year	0.73 [0.71, 0.75]	0.71 [0.69, 0.73]		1.40 [1.21, 1.61]**
Zero dose (0 mg)	1st year	0.28 [0.26, 0.30]	0.19 [0.17, 0.21]		2.38 [1.87, 3.04]**
	2nd year	0.33 [0.31, 0.35]	0.25 [0.23, 0.27]		2.11 [1.65, 2.70]**



Biologic use resulted in 2–3× increased odds of optimal reduction or cessation of SCS in real-world practice²³

Effective elimination of SCS use is achievable

SCS sparing^{11,16,24}

Address modifiable risk factors

Optimize other asthma therapies

Refer appropriate patients in a timely manner

Utilize SCS-sparing therapies

Joined-up approach



SCS stewardship^{1,16,24,25}

Use only when clinically justified

Use lowest dose possible; taper ASAP

Monitor use and AEs closely

Educate patients and physicians on risks

A structured and collaborative SCS stewardship approach is urgently required to protect patients and eliminate inappropriate SCS use in asthma^{1,16,26}

Steroid stewardship practice innovations: approaches across your institution

QUALITY AND EMR INITIATIVES

- ✓ Quality improvement projects^{16,27}
- ✓ Medication use evaluation projects²⁷
- ✓ EMR alerts and reports²⁷
- ✓ EMR SCS exposure threshold alert²⁸
- ✓ Order set implementation²⁷

REDESIGNED CARE PATHWAYS

- ✓ Asthma control assessment (AIRQ/Peds-AIRQ)^{29,30}
- ✓ SABA-only refill request triage²⁷
- ✓ EMR alerts and reports²⁸
- ✓ Standardized thresholds for specialty referral/evaluation²⁷
- ✓ Emergency department and urgent care plan³¹

Education resources



Quality improvement measures



OCS toolkit



**P<0.001

*Consensus of an American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma, and Immunology, and American Thoracic Society workgroup.²⁰

1. Asthma and Allergy Foundation of America (AAFA). Oral corticosteroid stewardship statement. 2018. Available from: <https://aafa.org/wp-content/uploads/2022/08/oral-corticosteroid-stewardship-statement-november-2018.pdf> (Accessed March 13, 2026); 2. Price DB, et al. *J Asthma Allergy*. 2018;11:193–204; 3. Voorham J, et al. *Allergy*. 2019;74:273–283; 4. Canonica GW, et al. *World Allergy Organ J*. 2019;12:100007; 5. Kaplan A, et al. *J Clin Med*. 2020;9:921; 6. Lugogo N, et al. *Ann Allergy Asthma Immunol*. 2021;126:681–689.e1; 7. Upham JW, Chung LP. *Med J Aust*. 2018;209(Suppl. 2):S22–S27; 8. Perez-de-Llano L, et al. *Am J Respir Crit Care Med*. 2024;210:869–880; 9. Price D, Bourdin A. *EMJ Respir*. 2022;10:2–10; 10. Blakey J, et al. *Respirology*. 2021;26:1112–1130; 11. Sullivan PW, et al. *J Allergy Clin Immunol*. 2018;141:110–116.e7; 12. Lefebvre P, et al. *J Allergy Clin Immunol*. 2015;136:1488–1495; 13. Price D, et al. Poster presented at ATS 2022 (Abstract P459); 14. Davis GE, et al. *Clin Ther*. 2022;44:1187–1202; 15. Scherbacher PJ, et al. *RMD Open*. 2024;10:e003956; 16. GINA. Global Strategy for Asthma Management and Prevention. 2025. Available from: https://ginasthma.org/wp-content/uploads/2025/11/GINA-2025-Update-25_11_08-WMS.pdf (Accessed March 13, 2026); 17. NHLBI. National Asthma Education and Prevention Program. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Full report 2007. Available from: https://www.ncbi.nlm.nih.gov/books/NBK7232/pdf/Bookshelf_NBK7232.pdf (Accessed March 13, 2026); 18. Bleecker ER, et al. *Ann Allergy Asthma Immunol*. 2022;128:78–88; 19. Dalal AA, et al. *J Manag Care Spec Pharm*. 2016;22:833–847; 20. Blaiss M, et al. *Ann Allergy Asthma Immunol*. 2023;131:782–785; 21. Wechsler ME, et al. Poster presented at ERS 2023 (Abstract PA4722); 22. Larsson K, et al. *NPJ Prim Care Resp Med*. 2020;30:25; 23. Chen W, et al. *J Allergy Clin Immunol Pract*. 2025;13:2033–2048; 24. Price D, et al. *J Asthma Allergy*. 2017;10:209–223; 25. Volmer T, et al. *Eur Respir J*. 2018;52:1800703; 26. Bleecker ER, et al. *World Allergy Organ J*. 2022;15:100726; 27. National Committee for Quality Assurance (NCQA). Whitepaper – Improving Outcomes for People with Asthma: Challenges & A Call to Action. Available from: <https://wpcdn.ncqa.org/www-prod/wp-content/uploads/2024-NCQA-Asthma-Whitepaper-Final-LR.pdf> (accessed March 13, 2026); 28. Academy of Managed Care Pharmacy (AMCP). Drug Utilization Review. Available from: <https://www.amcp.org/concepts-managed-care-pharmacy/drug-utilization-review> (Accessed March 13, 2026); 29. Murphy KR, et al. *J Allergy Clin Immunol Pract*. 2020;8:2263–2274.e5; 30. Murphy KR, et al. *J Allergy Clin Immunol Pract*. 2025;13:2659–2671; 31. NCQA. Follow-up After Acute and Urgent Care Visits for Asthma (AAF-E). Available from: <https://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality-report/follow-up-after-acute-and-urgent-care-visits-for-asthma-aaf-e/> (Accessed March 13, 2026).