

## RESEARCH LETTER

### Oral glycopyrrolate for primary focal hyperhidrosis in a pediatric population: A cross-sectional study



*To the Editor:* Primary focal hyperhidrosis (PFH) is characterized by uncontrollable, excessive sweating in an otherwise healthy individual—typically involving the axillae, palms, and soles.<sup>1</sup> Hyperhidrosis can negatively impact the psychosocial well-being of adolescent patients and is associated with depression in adults.<sup>2,3</sup> When topical therapy is inadequate to manage hyperhidrosis, treatment with oral glycopyrrolate should be considered.<sup>1,2,4</sup> However, there are few studies and no widely accepted guidelines on the use of this systemic medication to treat pediatric patients with PFH. Uniquely challenging for adolescents is the need to balance adverse side-effects with treatment approaches that increase participation in school and extracurricular activities during developmentally critical periods.

We conducted a retrospective chart review of patients <19 years old at initial diagnosis of PFH seen at Rady Children's Specialists of San Diego Dermatology Clinics between February 10, 2011 and February 10, 2021. Inclusion in this study and

the clinical data were based on EPIC SlicerDicer searches of the >2 million patients in our electronic health records using the following International Classification of Diseases codes: 705.2, L74.510, L74.511, L75.512, L75.513, and L74.519. Analyses were performed using the *t* test, chi-square test, and logistic regression. This study was approved by the University of California San Diego institutional review board.

Patients seeking care for hyperhidrosis were predominantly female (61.9%) and the median age at initial presentation to dermatology was 14.6 years (Table I). The patient's racial/ethnic identification was reflective of the San Diego metropolitan area. Fifteen percent (*n* = 191) with a median age of 15.7 years were prescribed oral glycopyrrolate at a mean daily dose of 3.3 mg (0.056 mg/kg/d) (Table II). Of these patients, the following sites of involvement were reported: 24 (12.6%) hands only, 17 (8.9%) axillae only, 0 (0.0) feet only, 48 (25.1%) palmoplantar, 24 (12.6%) hands and axillae, and 81 (42.4%) >2 anatomic areas. On multivariate analysis, older age (odds ratio 1.16, 95% CI 1.09-1.23, *P* < .001) and female gender (odds ratio 1.79, 95% CI 1.27-2.53, *P* < .001) were positively associated with electronic

**Table I.** Patient characteristics overall (*N* = 1299) and prescriptions for oral glycopyrrolate

Patient characteristics	Total ( <i>N</i> = 1299)	Oral glycopyrrolate therapy ( <i>N</i> = 191)	No oral glycopyrrolate therapy ( <i>N</i> = 1108)	<i>P</i> value*
Median age at initial visit (range), years	14.6 (0.43-18.97)	15.2 (7.3-18.8)	14.4 (0.43-18.97)	<.001
Female sex, % (n)	61.9 (804)	72.3 (138)	60.1 (666)	.002
Race, % (n)				.23
Hispanic	50.3 (653)	52.9 (101)	49.8 (552)	
White	40.5 (526)	36.6 (70)	41.2 (456)	
Asian/Pacific Islander	3.2 (41)	2.6 (5)	3.2 (36)	
Black/African American	2.5 (33)	4.7 (9)	2.2 (24)	
No race specified	3.5 (46)	3.1 (6)	3.6 (40)	
Insurance type, % (n)				.3
Unknown/uninsured	61.4 (797)	67.5 (129)	60.3 (668)	
Private	23.6 (306)	20.4 (39)	24.1 (267)	
Public	7.9 (102)	6.3 (12)	8.1 (90)	
Other government insurance	7.2 (94)	5.8 (11)	7.5 (83)	

\**P* value statistically significant if  $\alpha < .05$

**Table II.** Patients treated with oral glycopyrrolate

	Oral glycopyrrolate therapy (N = 191)
Median age in years when prescribed oral glycopyrrolate (range)	15.7 (8.2-19.1)
Location of involvement, % (n)	
Hands only	13.1 (25)
Axillae only	8.9 (17)
Feet only	0.0 (0)
Palmoplantar	25.7 (49)
Hands and axillae	12.6 (24)
Multifocal (>2 locations)	39.8 (76)
Specified	38.7 (74)
Not specified	1.0 (2)
Mean dose (mg/day)	3.3
Mean weight-based dose (mg/kg/day)	0.056

prescriptions for oral glycopyrrolate, whereas insurance type and race were not.

Body image and peer relationships are central to adolescent development, yet their influence on treating hyperhidrosis is not well understood. This study provides evidence that patient-provider decisions regarding treatment are not neutral with respect to sex and age and that a sizable proportion of patients diagnosed with PFH are <15 years old. It is plausible that for children and adolescents, regardless of perceived benefit, families and providers might not feel comfortable using a long-term systemic medication for this disorder. Less clear is an explanation for how gender norms might influence treatment. We speculate that the mean weight-based dose of 0.06 kg per day glycopyrrolate observed likely reflects a balance of provider comfort and dose efficacy. Our findings do not determine a causal relationship or assess the efficacy of oral glycopyrrolate but rather provide insight into designing future studies. Prospective studies are needed that address efficacy and evidence-based dosing strategies, as well as quality of life and shared decision-making in children and adolescents.

The Research Informatics team at Rady Children's Hospital San Diego performed the EPIC SlicerDicer-based data extractions.

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#### Conflicts of interest

None disclosed.

#### REFERENCES

1. Remington C, Ruth J, Hebert AA. Primary hyperhidrosis in children: a review of therapeutics. *Pediatr Dermatol.* 2021; 38(3):561-567.
2. Paller AS, Shah PR, Silverio AM, Wagner A, Chamlin SL, Mancini AJ. Oral glycopyrrolate as second-line treatment for primary pediatric hyperhidrosis. *J Am Acad Dermatol.* 2012; 67(5):918-923.
3. Bahar R, Zhou P, Liu Y, et al. The prevalence of anxiety and depression in patients with or without hyperhidrosis (HH). *J Am Acad Dermatol.* 2016;75(6):1126-1133.
4. Kumar MG, Foreman RS, Berk DR, Bayliss SJ. Oral glycopyrrolate for refractory pediatric and adolescent hyperhidrosis. *Pediatr Dermatol.* 2014;31(1):e28-e30.

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