

# Letters

## RESEARCH LETTER

### Opioid Use After First Opioid Prescription in Children With Sickle Cell Disease

Vaso-occlusive crises (VOCs) are recurrent, unpredictable bouts of acute pain starting in childhood in those with sickle cell disease (SCD).<sup>1</sup> These VOCs are often treated at home with analgesics, including opioids, prescribed in acute hospital settings or by pediatric hematologists.



Supplemental content

The opioid crisis has raised concerns about opioid prescribing's role in misuse and overdose in pediatric patients.<sup>2</sup> Some studies suggest that opioid-naive patients in emergency departments (EDs) being prescribed opioids for acute pain are at increased risk for additional opioid use<sup>3</sup>; however, there are sparse

data regarding actual rates of opioid prescribing in SCD.<sup>4</sup> We examined patterns of opioid use emerging within 3 years after the first filled prescription in opioid-naive children with SCD and described demographic factors of opioid use.

**Methods** | This retrospective cohort study used Medicaid enrollment and claims data from the 2011-2019 Georgia Sickle Cell Data Collection (SCDC) program. The SCDC included 2565 patients with confirmed or probable SCD diagnosis<sup>5</sup> aged 1 to 15 years by 2016, who had Medicaid coverage. Eligible children filled at least 1 opioid prescription between ages 0 to 9 years after 1 year without opioid prescriptions. Children were followed up for 3 years from 2012 to 2019; those missing more than 6 months of Medicaid coverage during follow-up were excluded. The Georgia State University Institutional Review Board

Table. Demographic and Clinical Characteristics by Days' Supply of Opioid From 2012 to 2019

Characteristics	Total No. (%) (n = 725)	Days' supply of opioid, No. (%)		
		1-9 (n = 193)	10-36 (n = 344)	>36 (n = 188) <sup>a</sup>
Age at first opioid prescription, y				
1	81 (11.2)	14 (7.3)	38 (11.0)	29 (15.4)
2	104 (14.3)	31 (16.1)	43 (12.5)	30 (16.0)
3	101 (13.9)	31 (16.1)	44 (12.8)	26 (13.8)
4	86 (11.9)	18 (9.3)	48 (14.0)	20 (10.6)
5	88 (12.1)	20 (10.4)	48 (14.0)	20 (10.6)
6	66 (9.1)	18 (9.3)	34 (9.9)	14 (7.4)
7	70 (9.7)	24 (12.4)	31 (9.0)	15 (8.0)
8	65 (9.0)	21 (10.9)	25 (7.3)	19 (10.1)
9	64 (8.8)	16 (8.3)	33 (9.6)	15 (8.0)
Race and ethnicity <sup>b</sup>				
Black	684 (94.3)	180 (93.3)	322 (93.6)	>177 (>94.1)
Other or unknown <sup>c</sup>	41 (5.7)	13 (6.7)	22 (6.4)	<11 (<5.9)
Sex				
Female	344 (47.4)	86 (44.6)	165 (48.0)	93 (49.5)
Male	381 (52.6)	107 (55.4)	179 (52.0)	95 (50.5)
SCD genotype				
Hb SS or Hb S β <sup>0</sup> -thalassemia <sup>d</sup>	421 (58.1)	91 (47.2)	196 (57.0)	>127 (>67.5)
Hb S β <sup>+</sup> -thalassemia	49 (6.8)	14 (7.3)	24 (7.0)	11 (5.9)
Hb SC	171 (23.6)	49 (25.4)	83 (24.1)	39 (20.7)
Other or unknown <sup>e</sup>	84 (11.6)	39 (20.2)	41 (11.9)	<11 (<5.9)
Opioid type at first prescription				
Codeine	192 (26.5)	62 (32.1)	86 (25.0)	44 (23.4)
Hydrocodone or other	533 (73.5)	131 (67.9)	258 (75.0)	144 (76.6)
No. of VOC events/3 y				
0	171 (23.6)	87 (45.1)	70 (20.3)	14 (7.4)
1-3	330 (45.5)	88 (45.6)	186 (54.1)	56 (29.8)
>3	224 (30.9)	18 (9.3)	88 (25.6)	118 (62.8)
VOC events/3 y, median (IQR), d	2 (1.0-4.0)	NA	NA	NA
VOC events/3 y, mean (SD), d	3 (3.5)	NA	NA	NA
Total supply/3 y, median (IQR), d	17.0 (9.0-37.0)	NA	NA	NA
Total supply/3 y, mean (SD), d	30.0 (41.3)	NA	NA	NA

Abbreviations: Hb, hemoglobin; NA, not applicable; SCD, sickle cell disease; VOC, vaso-occlusive crisis.

<sup>a</sup> Cell sizes smaller than 11 were suppressed according to Centers for Medicare and Medicaid Services policy.

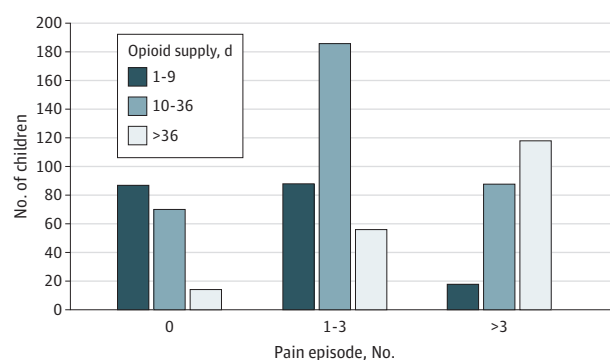
<sup>b</sup> Race and ethnicity were self-reported and obtained from Medicaid claims and enrollment data. Only Black patients are included in the table due to small sizes for other racial and ethnic categories. Ethnicity is a separate variable in Medicaid claims and enrollment data but is missing from too many records to report accurately.

<sup>c</sup> Other race and ethnicity included Asian and White.

<sup>d</sup> Sickle cell anemia: Hb SS or Hb S β<sup>0</sup>-thalassemia.

<sup>e</sup> Other SCD genotype included compound heterozygous forms of SCD.

**Figure. Children With Sickle Cell Disease Categorized by Pain Episodes and Days' Supply of Opioids Over 3 Years**



approved the study and waived informed consent under secondary research exemption. We followed the [STROBE](#) reporting guideline.

Primary outcome for the initial group-based trajectory modeling was days' supply of opioids per quarter over 3 years. Outcome was reported as mean (SD) or median (IQR) and categorized by first (25%) and third (75%) quantiles of days' supply over 3 years. Descriptive variables included age, sex, SCD genotype, opioid type, and number of VOCs. All variables were defined using Medicaid data, except laboratory-confirmed SCD genotype; only VOCs treated in medical settings (eg, EDs, hospitals) were counted. Pearson correlation coefficient assessed correlation between VOCs and days' supply of opioids. Total prescriptions, days' supply per prescription, and whether prescription was filled within 5 days of the VOC were also ascertained.

Two-sided  $P < .05$  indicated statistical significance. Data analysis was performed between January and November 2023 using SAS 9.4 (SAS Institute).

**Results** | Among 725 children (mean [SD] age, 4.6 [2.5] years; 344 female [47.4%], 381 male [52.6%]) who received an initial opioid prescription, only 1 pattern of low opioid use emerged. Four hundred twenty-one patients (58.1%) had confirmed hemoglobin SS or hemoglobin S  $\beta^0$ -thalassemia. Descriptive statistics are reported in the [Table](#). Mean (SD) days' supply of opioids over 3 years was 30.0 (41.3), with a median (IQR) of 17.0 (9.0-37.0). During follow-up, 171 patients (23.6%) had 0 VOCs, 330 (45.5%) had 1 to 3, and 224 (30.9%) had over 3. Correlation between number of VOCs and days' supply was  $r = 0.58$  ( $P < .001$ ) ([Figure](#)). Of 3215 prescriptions, 818 (25.4%) were filled within 5 days of a hospitalized VOC. Regardless of when filled, median (IQR) days' supply per prescription was 5.0 (4.0-8.0).

**Discussion** | In opioid-naïve children with SCD, no concerning patterns of long-term or increasing use of opioids were identified within 3 years after their first opioid prescription. Generally, patients filled less than a 30-day supply despite most having at least 1 VOC needing medical attention during follow-up. The SCD guidelines recommend rapid opioid treatment for VOC-related pain.<sup>6</sup>

While the number of VOCs was associated with days' supply, only 25.4% of opioid prescriptions were filled within 5 days of VOC hospitalization to address a need for continued analgesics after discharge. This finding suggests that most prescriptions are written in outpatient settings by SCD specialists to help manage severe pain at home. Future research should examine whether low opioid use reflects effective nonopioid pain management strategies or highlights an unintended and potentially harmful treatment access problem secondary to the opioid epidemic. A study limitation is the focus on patients with Medicaid, potentially restricting generalizability to patients with commercial insurance.

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**Author Contributions:** Dr Snyder and Ms Zhou had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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**Data Sharing Statement:** See the [Supplement](#).

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### HEALTH AND THE 2024 US ELECTION Reasons for Nonparticipation in the Special Supplemental Nutrition Program for Women, Infants, and Children

Participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), a program that provides nutritious foods, nutrition education, and health care referrals to infants and children younger than 5 years in low-income families, has declined in the past decade. Two-thirds of WIC participants have reported they were still eligible for benefits after leaving the program.<sup>1-3</sup> The objective of this article is to describe the reasons children discontinued or never participated in WIC using a National Health and Nutrition Examination (NHANES) 2019 to March 2020 convenience sample.

**+**  
Supplemental content

**Methods** | The NHANES protocol was approved by the National Center for Health Statistics Ethics Review Board. The cross-sectional survey includes household-based questionnaires and health measures conducted in a mobile examination center.<sup>4</sup> Data collection was suspended in March 2020, due to COVID-19, resulting in an incomplete sample that cannot be used to make nationally representative estimates. An adult provided informed consent, responded for each child participant, and could report more than one reason.

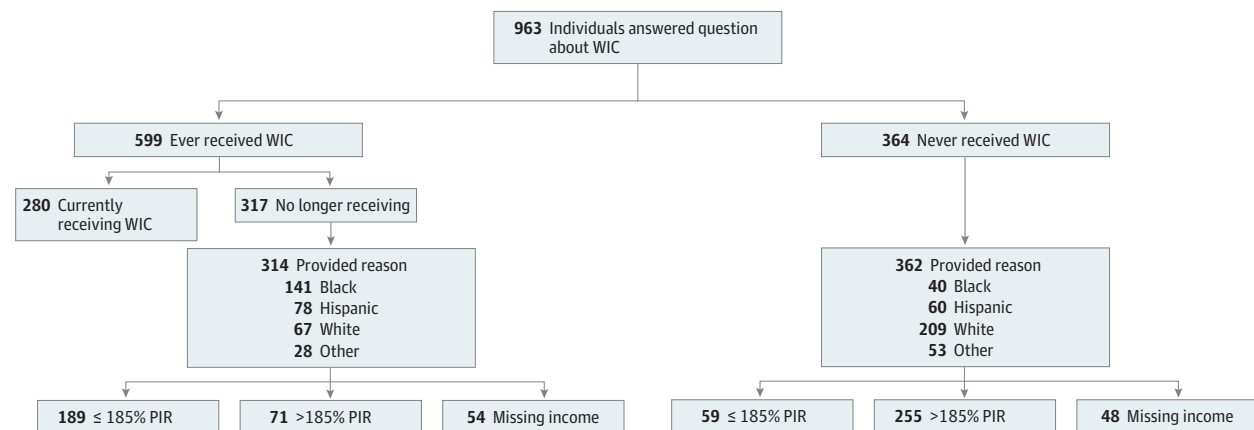
Two questions about the reasons eligible children did not participate in WIC<sup>5</sup> were included in NHANES during 2019 to March 2020 in English, Spanish, or via interpreter. Most proxies reported only 1 reason for discontinuing (83.1%) or never participating (84.3%) in WIC.

Reasons reported for at least 10 participants are presented. Because WIC income eligibility includes those with 185% or less of the Department of Health and Human Services poverty guideline, results are shown overall and by income eligibility at the time of interview. Race and ethnicity data were collected via self-report and included to represent the diverse population WIC serves.

Analyses were performed using SAS version 9.4 (SAS Institute). Because analysis was conducted on a convenience sample, statistical comparisons were not performed, and the results are not nationally representative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline was followed.

**Results** | In a convenience sample of 963 children 5 years and younger who participated in NHANES from 2019 to March 2020, 599 (62.2%) ever received WIC (Figure). Among those who ever received WIC, 314 (52.4%) were no longer receiving WIC at the time of the interview and provided a reason for no longer participating in WIC; 189 (60%) of these participants discontinued benefits but were income eligible. Among the 362

Figure. Sample of Children With Information on Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Participation



Source: unweighted National Health and Nutrition Examination Survey, 2019-March 2020; data available through the National Center for Health Statistic's Research Data Center. Race and Hispanic origin were self-reported and included because WIC serves a diverse population. Other includes race

groups not shown separately including Asian, American Indian, Alaska Native, Pacific Islander, and people reporting multiple races and were grouped due to small sample size. Income was self-reported at the time of interview. PIR indicates poverty income ratio.