

BRIEF REPORT

Racial, Ethnic, and Socioeconomic Disparities in Patient Safety Events for Hospitalized Children

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ABSTRACT

OBJECTIVES: Previous studies have revealed racial/ethnic and socioeconomic disparities in quality of care and patient safety. However, these disparities have not been examined in a pediatric inpatient environment by using a measure of clinically confirmed adverse events (AEs). In this study, we do so using the Global Assessment of Pediatric Patient Safety (GAPPS) Trigger Tool.

METHODS: GAPPS was applied to medical records of randomly selected pediatric patients discharged from 16 hospitals in the Pediatric Research in Inpatient Settings Network across 4 US regions from January 2007 to December 2012. Disparities in AEs for hospitalized children were identified on the basis of patient race/ethnicity (black, Latino, white, or other; $N = 17\,336$ patient days) and insurance status (public, private, or self-pay/no insurance; $N = 19\,030$ patient days).

RESULTS: Compared with hospitalized non-Latino white children, hospitalized Latino children experienced higher rates of all AEs (Latino: 30.1 AEs per 1000 patient days versus white: 16.9 AEs per 1000 patient days; $P \leq .001$), preventable AEs (Latino: 15.9 AEs per 1000 patient days versus white: 8.9 AEs per 1000 patient days; $P = .002$), and high-severity AEs (Latino: 12.6 AEs per 1000 patient days versus white: 7.7 AEs per 1000 patient days; $P = .02$). Compared with privately insured children, publicly insured children experienced higher rates of preventable AEs (public: 12.1 AEs per 1000 patient days versus private: 8.5 AEs per 1000 patient days; $P = .02$). No significant differences were observed among other groups.

CONCLUSIONS: The GAPPS analysis revealed racial and/or ethnic and socioeconomic disparities in rates of AEs experienced by hospitalized children across a broad range of geographic and hospital settings. Further investigation may reveal underlying mechanisms of these disparities and could help hospitals reduce harm.



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Drs Stockwell and Landrigan conceptualized and designed the study, coordinated and supervised the data collection, conducted initial analyses, drafted the initial manuscript, and reviewed and revised the manuscript; Drs Toomey and Schuster conceptualized and designed the study, obtained funding, coordinated and supervised the data collection, conducted initial analyses, drafted the initial manuscript, and reviewed and revised the manuscript; Mr Westfall collected the data, conducted initial analyses, and reviewed and revised the manuscript; Ms Liu collected the data, conducted initial analyses, drafted the initial manuscript, and reviewed and revised the manuscript; Dr Parry coordinated and supervised the data collection, conducted initial analyses, and critically reviewed the manuscript; Mr Coopersmith interpreted data, drafted portions of the manuscript, and critically reviewed and revised the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

Disparities in care processes and outcomes related to race, ethnicity, primary language, and insurance status have been identified throughout the health care system. In 2003, the Institute of Medicine summarized many of these findings and offered possible solutions.¹ In pediatrics in particular, disparities have been found in health status,² insurance coverage,³ access to care, use of services,^{4–6} level of pain experienced, and treatment of pain.⁷ Studies have revealed that families and patients who do not speak English as a primary language at home,⁸ as well as patients with public insurance,⁹ are especially vulnerable to poor-quality care.

Patient safety is an ongoing area of concern for pediatric disparities.¹⁰ Previous research has suggested that disparities in patient safety exist for black and Latino children, for children whose families do not primarily speak English,¹¹ and for children on Medicaid insurance.¹² Inpatient adverse events (AEs) have been identified via a variety of methods, including voluntary provider reporting,¹³ manual chart review,¹⁴ and discharge record analysis.¹⁵ Trigger tools are used to identify elements of medical records that potentially represent AEs, which are then investigated by clinicians to determine the presence of AEs. Trigger tools are more efficient than an exhaustive manual chart review and are more likely to detect AEs than voluntary incident reporting or an examination of billing codes.¹⁶ The Global Assessment of Pediatric Patient Safety (GAPPS) Trigger Tool builds on previous pediatric trigger tools because it can be used to rigorously evaluate the accuracy of each trigger, measure interrater reliability, and ensure consistency across hospital contexts.¹⁷ To our knowledge, patient safety disparities have not been previously identified in the pediatric inpatient environment by measuring rates of clinically confirmed AEs in a multisite investigation.

METHODS

We used GAPPS to examine the prevalence of disparities in AE rates in different patient populations across a range of hospitals with varying characteristics. GAPPS was applied to medical records of randomly selected

patients discharged between January 2007 and December 2012 from 16 hospitals selected through the Pediatric Research in Inpatient Settings Network. This process has been described previously.¹⁷ Briefly, nurse reviewers at each hospital investigated selected records, identifying AEs on the basis of GAPPS triggers. Once identified, 2 secondary physician reviewers independently adjudicated on AEs. Once confirmed, severity of AEs was rated by using National Coordinating Council for Medication Error Reporting and Prevention standards, and preventability was rated by using a 4-point Likert scale. The institutional review boards at each hospital approved all study procedures.

Hospital Characteristics

We selected 4 hospitals from each of 4 US regions: Northeast, Midwest, West, and South. Academic or nonacademic community status was determined by categorizations set by the American Hospital Association,¹⁸ and a balance of academic and nonacademic hospitals was selected from each region.

Patient Characteristics

Race/ethnicity and insurance status were abstracted from selected medical records. Race/ethnicity was recorded by using the categories Alaskan native, American Indian, Asian, black, non-Latino white, Latino, native Hawaiian or other Pacific Islander, and other. We combined patients in the categories Alaskan native; American Indian; Asian; native Hawaiian or other Pacific Islander; and non-white, non-Latino other into a single “Other” category because each of the categories represented a small number of hospitalizations.

Insurance status was recorded by using 6 nonmutually exclusive categories: Medicaid, Medicare, private insurance, self-pay, no insurance, and not recorded. We excluded hospitalizations for patients covered by Medicare because pediatric eligibility for Medicare is based on having specific medical conditions.¹⁹ We combined self-pay and no insurance into a single category and excluded records with no recorded insurance status. Therefore, we categorized patients into public insurance

(Medicaid), private insurance, and self-pay/no insurance groups. Patients who were recorded as having both private and public insurance were included in the private insurance group.

Statistical Analysis

We examined the distribution of overall, preventable, and high-severity AEs. AEs with National Coordinating Council for Medication Error Reporting and Prevention severity categories of F to I were considered high severity.²⁰ AEs were compared by racial and/or ethnic group (black, white, Latino, and other) and insurance status (public insurance, private insurance, and self-pay/no insurance). To assess the number of AEs per 1000 patient days for the aforementioned characteristics, we performed Poisson regression models with race/ethnicity and insurance status as predictors (included in the model independently). All between-group differences were tested at a 2-sided 0.05 significance level.

RESULTS

Of 3790 medical records reviewed, race/ethnicity was documented in 3231; there were 17 336 patient days for this group. Insurance status was documented in 3468 records with 19 030 patient days. As previously reported,²¹ reviewers identified a total of 413 AEs (19.5 AEs per 1000 patient days; 95% confidence interval [CI]: 17.6–21.4) and 209 preventable AEs (9.9 AEs per 1000 patient days; 95% CI: 8.5–11.2) across the entire cohort of patients.

In an examination of potential disparities by race/ethnicity, only the Latino subset showed a difference from the white (reference) group (Table 1). This difference persisted across all AEs (Latino: 30.1 AEs per 1000 patient days versus white: 16.9 AEs per 1000 patient days; $P \leq .001$), preventable AEs (Latino: 15.9 AEs per 1000 patient days versus white 8.9 AEs per 1000 patient days; $P = .002$), and high-severity AEs (Latino: 12.6 AEs per 1000 patient days versus white 7.7 AEs per 1000 patient days; $P = .02$).

When examining the insurance status groups, there were fewer AEs in the

TABLE 1 All, Preventable, and High-Severity AEs per 1000 Patient Days by Race/Ethnicity

| Race/Ethnicity | Patient Records (<i>N</i> = 17 336), <i>n</i> (%) | All AEs | | Preventable AEs | | High-Severity AEs | |
|----------------|----------------------------------------------------------|------------------------------------------|-----------|------------------------------------------|-----------|------------------------------------------|-----------|
| | | AEs per 1000 Patient Days (95% CI) | <i>P</i> | AEs per 1000 Patient Days (95% CI) | <i>P</i> | AEs per 1000 Patient Days (95% CI) | <i>P</i> |
| White | 11 238 (64.8) | 16.9 (14.7–19.5) | Reference | 8.9 (7.3–10.8) | Reference | 7.7 (6.3–9.6) | Reference |
| Black | 2558 (14.8) | 18.4 (13.8–24.5) | .61 | 5.9 (3.5–9.7) | .13 | 10.2 (6.9–14.9) | .22 |
| Latino | 2459 (14.2) | 30.1 (24.0–37.8) | <.001 | 15.9 (11.6–21.7) | .002 | 12.6 (8.9–17.9) | .02 |
| Other | 1081 (6.2) | 20.4 (13.4–30.9) | .41 | 11.1 (6.3–19.5) | .47 | 12.0 (7.0–20.7) | .14 |

self-pay/insurance category for all AEs compared with those in the private insurance category, although this disparity did not reach significance (self-pay/no insurance: 7.7 AEs per 1000 patient days versus private: 18.7 AEs per 1000 patient days; *P* = .08; Table 2). The public insurance group had a higher AE rate compared with the private insurance group, but the difference did not reach significance (public: 22.3 AEs per 1000 patient days versus private: 18.7 AEs per 1000 patient days; *P* = .09). However, the public group had a significantly higher preventable AE rate than the private group (public: 12.1 AEs per 1000 patient days versus private: 8.5 AEs per 1000 patient days; *P* = .02).

DISCUSSION

In a 16-hospital study, we found higher rates of AEs, including preventable and high-severity AEs, among hospitalized Latino versus white children. We also found higher rates of preventable AEs for hospitalized children with public versus private insurance.

The AE disparity between Latino and white patients persisted across AE type. Although we cannot be certain from this investigation, we hypothesize that language barriers may contribute to this disparity and should be further explored. Compared

with white children, Latino children are less likely to speak English at home.⁶ Disparities in health, use of health services, and access to care have been found for this population.⁸ Adverse patient safety events due to language barriers have been documented, sometimes resulting from misinterpretation among practitioners, patients, and families.^{11,22} However, to our knowledge, linguistic disparities in pediatric inpatient safety events have not been measured on a large scale.

Despite previously reported health and patient safety disparities for black children on a national level,¹⁰ particularly in birth trauma,²³ we did not find statistically significant differences in AE rates between hospitalized black and white children. Further examination of the relationship among AE rates, race/ethnicity, and health disparities is required to understand this discrepancy. With this study, we may not have had sufficient statistical power to identify the potential disparity. Health disparities among black and white children on a national level are primarily driven by a wider range of factors other than inpatient safety.²⁴

The insurance status disparity in the frequency of preventable AEs should also be investigated. Because children must fall below a family income threshold to be

eligible for Medicaid, insurance status disparities indicate socioeconomic inequalities in patient safety. The potentially lower AE rates for the self-pay/no insurance category call for further study as well. This category likely includes children with both families with limited resources and families with relatively high socioeconomic status who can afford to pay out of pocket.

The mechanisms of racial and/or ethnic and insurance status disparities necessitate further exploration. Provider bias and discrimination may play a role; providers may unconsciously or consciously perceive²⁵ or treat²⁶ patients differently depending on their insurance status, socioeconomic status, or race/ethnicity. Closer examination of patient and family experience and coordination of care could be used to determine key processes and moments in which these disparities are perpetuated.

This work has limitations. The data were collected from 2007 to 2012, and the quality of care may have changed since that time. More recent data may yield differing results. Additionally, although trigger-based safety event identification represents the most sensitive method that is currently employed widely, some events likely escaped the review process. Medical record review-based investigations have human reviewers who are central to the capture of events,

TABLE 2 All, Preventable, and High-Severity AEs per 1000 Patient Days by Insurance Type

| Insurance | Patient Records (<i>N</i> = 19 030), <i>n</i> (%) | All AEs | | Preventable AEs | | High-Severity AEs | |
|--------------------|----------------------------------------------------------|------------------------------------------|-----------|------------------------------------------|-----------|------------------------------------------|-----------|
| | | AEs per 1000 Patient Days (95% CI) | <i>P</i> | AEs per 1000 Patient Days (95% CI) | <i>P</i> | AEs per 1000 Patient Days (95% CI) | <i>P</i> |
| Private | 10 883 (57.2) | 18.7 (16.2–21.4) | Reference | 8.5 (6.8–10.4) | Reference | 9.1 (7.4–11.1) | Reference |
| Public | 7630 (40.1) | 22.3 (19.1–25.9) | .09 | 12.1 (9.7–14.8) | .02 | 10 (7.8–12.5) | .55 |
| Self-pay/insurance | 517 (2.7) | 7.7 (2.1–19.8) | .08 | 3.9 (0.5–14.0) | .3 | 3.9 (0.5–14.0) | .23 |

and therefore may miss events. Furthermore, because of potential bias, individuals documenting events in charts or reviewing charts for AEs may be more or less likely to identify AEs or rate them as preventable depending on patient race/ethnicity or insurance status. Other demographic variables (eg, age) or medical variables (eg, severity of illness and length of stay) may be associated with and/or confound race/ethnicity or insurance status and may also contribute to disparities.

CONCLUSIONS

We found a higher incidence of AEs in hospitalized Latino children compared with hospitalized non-Latino white children as well as a higher incidence of preventable AEs in hospitalized children with public insurance. In addition to employing process-based improvements to address safety events, understanding the nature of these disparities may assist hospitals in reducing their rates of harm.

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REFERENCES

1. Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. In: Smedley BD, Stith AY, Nelson AR, eds. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: National Academies Press (US); 2003. Available at: www.ncbi.nlm.nih.gov/books/NBK220358/. Accessed January 15 2018

2. Flores G, Olson L, Tomany-Korman SC. Racial and ethnic disparities in early childhood health and health care. *Pediatrics*. 2005;115(2). Available at: www.pediatrics.org/cgi/content/full/115/2/e183
3. Shone LP, Dick AW, Klein JD, Zwanziger J, Szilagyi PG. Reduction in racial and ethnic disparities after enrollment in the State Children's Health Insurance Program. *Pediatrics*. 2005;115(6). Available at: www.pediatrics.org/cgi/content/full/115/6/e697
4. Flores G, Tomany-Korman SC. Racial and ethnic disparities in medical and dental health, access to care, and use of services in US children [published correction appears in *Pediatrics*. 2009;124(3):999–1000]. *Pediatrics*. 2008;121(2). Available at: www.pediatrics.org/cgi/content/full/121/2/e286
5. Lau M, Lin H, Flores G. Racial/ethnic disparities in health and health care among U.S. adolescents. *Health Serv Res*. 2012;47(5):2031–2059
6. Flores G, Lin H. Trends in racial/ethnic disparities in medical and oral health, access to care, and use of services in US children: has anything changed over the years? *Int J Equity Health*. 2013;12:10
7. Sadhasivam S, Chidambaran V, Ngamprasertwong P, et al. Race and unequal burden of perioperative pain and opioid related adverse effects in children. *Pediatrics*. 2012;129(5):832–838
8. Flores G, Tomany-Korman SC. The language spoken at home and disparities in medical and dental health, access to care, and use of services in US children [published correction appears in *Pediatrics*. 2009;124(4):1265]. *Pediatrics*. 2008;121(6). Available at: www.pediatrics.org/cgi/content/full/121/6/e1703
9. Bethell CD, Kogan MD, Strickland BB, Schor EL, Robertson J, Newacheck PW. A national and state profile of leading health problems and health care quality for US children: key insurance disparities and across-state variations. *Acad Pediatr*. 2011;11(suppl 3):S22–S33
10. Miller MR, Elixhauser A, Zhan C. Patient safety events during pediatric hospitalizations. *Pediatrics*. 2003;111(6 pt 1):1358–1366
11. Cohen AL, Rivara F, Marcuse EK, McPhillips H, Davis R. Are language barriers associated with serious medical events in hospitalized pediatric patients? *Pediatrics*. 2005;116(3):575–579
12. Miller MR, Zhan C. Pediatric patient safety in hospitals: a national picture in 2000. *Pediatrics*. 2004;113(6):1741–1746
13. Leape LL. Reporting of adverse events. *N Engl J Med*. 2002;347(20):1633–1638
14. Murff HJ, Patel VL, Hripcsak G, Bates DW. Detecting adverse events for patient safety research: a review of current methodologies. *J Biomed Inform*. 2003;36(1–2):131–143
15. Miller MR, Elixhauser A, Zhan C, Meyer GS. Patient safety indicators: using administrative data to identify potential patient safety concerns. *Health Serv Res*. 2001;36(6 pt 2):110–132
16. Classen DC, Resar R, Griffin F, et al. 'Global trigger tool' shows that adverse events in hospitals may be ten times greater than previously measured. *Health Aff (Millwood)*. 2011;30(4):581–589
17. Landrigan CP, Stockwell D, Toomey SL, et al. Performance of the Global Assessment of Pediatric Patient Safety (GAPPS) tool. *Pediatrics*. 2016;137(6):e20154076
18. American Hospital Association. Quick reports. Available at: www.ahadataviewer.com/quickreport/. Accessed January 15, 2018
19. Centers for Medicare and Medicaid Services. Medicare. Available at: www.cms.gov/Medicare/Medicare.html. Accessed January 15, 2018
20. National Coordinating Council for Medication Error Reporting and

- Prevention. Types of medication errors. Available at: www.nccmerp.org/types-medication-errors. Accessed January 15, 2018
21. Stockwell DC, Landrigan CP, Toomey SL, et al; GAPPS Study Group. Adverse events in hospitalized pediatric patients. *Pediatrics*. 2018;142(2):e20173360
22. Flores G. Language barriers to health care in the United States. *N Engl J Med*. 2006;355(3):229–231
23. Flores G, Ngui E. Racial/ethnic disparities and patient safety. *Pediatr Clin North Am*. 2006;53(6):1197–1215
24. Williams DR, Jackson PB. Social sources of racial disparities in health. *Health Aff (Millwood)*. 2005;24(2):325–334
25. van Ryn M, Burke J. The effect of patient race and socio-economic status on physicians' perceptions of patients. *Soc Sci Med*. 2000;50(6):813–828
26. Arpey NC, Gaglioti AH, Rosenbaum ME. How socioeconomic status affects patient perceptions of health care: a qualitative study. *J Prim Care Community Health*. 2017;8(3):169–175

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