Breastfeeding Rates Differ Significantly by Method Used: A Cause for Concern for Public Health Measurement

Valerie J. Flaherman,¹ Alyna T. Chien,² Charles E. McCulloch,³ and R. Adams Dudley⁴

Abstract

Objective: Accurate measurements of prevalence of “any” breastfeeding and “exclusive” breastfeeding help assess progress toward public health goals. We compared two commonly used data sources for measuring breastfeeding rates to assess agreement.

Methods: The National Immunization Survey (NIS) is used by the Centers for Disease Control and Prevention to measure progress toward national breastfeeding goals and obtains breastfeeding outcomes retrospectively at 19–35 months. The California Newborn Screen (CNS) is a contemporaneous measure of breastfeeding during birth hospitalization and measures progress toward public health goals in California. We compared results for “any breastfeeding” and “exclusive breastfeeding” for California infants in the NIS to those in the CNS using descriptive statistics.

Results: Our results show that the two methods produce similar results for “any” breastfeeding at <4 days: 82.7%, 95% confidence interval (79.6%, 85.8%) in the NIS and 86.1% (86.0%, 86.2%) in the CNS. However, the two methods produce very different results for “exclusive” breastfeeding at <4 days: 60.4% (56.6%, 64.1%) in the NIS and 41.6% (41.5%, 41.7%) in the CNS. Rates of “exclusive” breastfeeding varied more for some subgroups; for Hispanics, estimates were 61.1% (56.1%, 66.1%) in the NIS and 29.7% (29.5%, 29.9%) in the CNS.

Conclusions: There is good agreement between two disparate methods for assessing “any” breastfeeding rates. However, our findings suggest that the NIS, the CNS, or both are flawed measures of “exclusive” breastfeeding. Validated methods for measuring “exclusive” breastfeeding would allow improved monitoring of breastfeeding prevalence.

Introduction

BREASTFEEDING BENEFITS INFANTS by reducing risk of gastroenteritis, lower respiratory infection, and all types of hospital admission, and exclusive breastfeeding without any formula through 6 months has been shown to provide maximum risk reduction.^{1–4} Healthy People 2010 set objectives for increasing rates of “any” breastfeeding and “exclusive” breastfeeding.^{5,6} These objectives have been retained as proposed objectives for Healthy People 2020 and define “exclusive” breastfeeding as no liquid or food other than breastmilk through 3 months and through 6 months postpartum.⁷ The Joint Commission has also recently announced specifications for its Perinatal Care Core measures that include measurement of exclusive breastfeeding at the time of hospital discharge.⁸ Thus, an infant who receives formula in the newborn period—even small quantities as a supplement

until breastfeeding is fully established—has not met 2010 or proposed 2020 Healthy People objectives of exclusive breastfeeding through 3 months and through 6 months and may not have met Joint Commission Perinatal Care Core standards.

The Centers for Disease Control and Prevention (CDC) has reported that rates of breastfeeding in the immediate postpartum period are close to the Healthy People 2010 goal of 75% of mothers initiating breastfeeding.⁹ However, rates of exclusive breastfeeding through 3 months and 6 months remain far below the Healthy People 2010 targets, with the most recent CDC estimates of exclusive breastfeeding through 3 and 6 months being 30.5% and 11.3%, respectively.¹⁰ Race and ethnicity have a significant relationship with breastfeeding rates: women of Hispanic ethnicity have slightly higher rates of breastfeeding initiation than non-Hispanic whites, while blacks have lower rates of breastfeeding at both initiation and later time points than non-Hispanic whites.¹¹

¹Department of Pediatrics, University of California San Francisco, San Francisco, California.

²Division of General Pediatrics, Children’s Hospital, Boston, Massachusetts.

³Department of Epidemiology and Biostatistics, University of California San Francisco, San Francisco, California.

⁴Department of Medicine and Institute for Health Policy Studies, University of California San Francisco, San Francisco, California.

To monitor progress toward Healthy People 2010 and proposed Healthy People 2020 breastfeeding objectives, the CDC uses data from the National Immunization Survey (NIS). The NIS is a survey design that uses phone questionnaire of parents of children 19–35 months and queries a parent about their child's early breastmilk and formula intake.¹¹ NIS estimates have not been validated in the published literature. The California Department of Public Health (CDPH) measures breastfeeding rates in California using the California Newborn Screen (CNS). The CNS program measures breastfeeding rates by requiring hospital staff to collect feeding data on all newborns before discharge from birth hospitalization and between 12 hours and 5 days of age. The CNS program does not specify a method for hospital staff to collect these data, and a report published by the California Women's, Infants and Children Division suggests that different hospitals may use different methods, including maternal report, nursing notes, and direct feeding observation.¹² To our knowledge, there is no published literature validating the CNS. Finding substantial agreement across the NIS and the CNS could increase our confidence in breastfeeding rate estimates. Finding discrepancies could highlight areas needing refinement. Therefore, we compared NIS and CNS estimates of "any" and "exclusive" breastfeeding rates in the immediate postpartum period.

Methods

The NIS is a list-assisted random-digit-dialing telephone survey designed for the purpose of determining estimates of immunization coverage. The target population for the NIS is children 19–35 months old, and the sample size was chosen to provide estimations of vaccination coverage.¹³ Breastfeeding questions designed to assess national breastfeeding practices have been a component of the NIS since 2001; the breastfeeding questions for the 2006 NIS are described in Table 1. We obtained publicly available data on the NIS from the NIS website.¹⁴ We identified all 2,337 California children from the 2006 NIS using the state code "California" and extracted data on geographic region, race/ethnicity, survey weighting, and available breastfeeding measures. We defined breastfeeding status for subjects in the NIS based on responses to NIS breastfeeding questions and classified subjects in the NIS as "any" breastfeeding if there was a "yes" response to Question 1 or a response of ≥ 1 day to Question 2 (Table 1).

We compared 2006 NIS results to the 2004 CNS (508,277 California children born in 2004) because the 2006 NIS surveyed children at 19–35 months and most children in the 2006 NIS were born in 2004. We obtained publicly available data on the CNS from the CDPH website.¹⁵ CNS results are based on hospital staff reports of what newborns had been fed between birth and time of screening, with five choices, including human milk, formula, fortifier, total parenteral nutrition/hyp-

eral, and intravenous fluid. CNS data were taken from a published report by the CDPH including data summarized by hospital, by county, and for the state as a whole and by race/ethnicity for each hospital, for each county, and for the state as a whole. CNS infants are defined by the CDPH as "any" breastfeeding if they had received human milk at the time of the newborn screen and as "exclusively" breastfeeding if they had received human milk and had not received formula. Of note is that infants who received breastmilk and water were classified as "exclusively breastfeeding" by the CNS but not "exclusively breastfeeding" by the NIS.

Because CNS assessment must occur before discharge¹⁶ and because most California infants are discharged at <4 days,¹⁷ we classified NIS subjects as exclusively breastfeeding if they met our classification for "any" breastfeeding and the response to question 3 was ≥ 4 days (Table 1). We compared NIS results to CNS results using descriptive statistics and confidence intervals (CIs). Because incorrect recall of formula may have little clinical importance if recall differs by only a few days, we conducted a sensitivity analysis comparing CNS data with NIS data for exclusive breastfeeding through ≥ 14 days. We used sampling weights available in the NIS dataset.¹⁸ All analysis was conducted using Stata version 9.2 (Stata Corp., College Station, TX). This study was approved by the University of California San Francisco Committee on Human Research.

Results

As shown in Table 2, "any" breastfeeding rates were similar when using NIS and CNS data for the state as a whole and for most racial/ethnic groups and geographic areas, although some statistically significant differences can be noted. Overall, statewide rates of "any" breastfeeding were 82.7% (95% CI, 79.6%, 85.8%) in the NIS and 86.1% (86.0%, 86.2%) in the CNS. Rates of "any" breastfeeding for Hispanics, blacks, and residents of Los Angeles and San Diego did not differ between the two measures.

In contrast, "exclusive" breastfeeding rates differed significantly between the two data sources—the 95% CI of the NIS was well above the upper bound of that of the CNS for the state as a whole, for Hispanics, and for residents of Los Angeles and San Diego. Statewide rates of "exclusive" breastfeeding were 60.4% (56.6%, 64.1%) in the NIS and 41.6% (41.5%, 41.7%) in the CNS. For Hispanics statewide and for the city of Los Angeles, NIS estimates for exclusive breastfeeding were more than double CNS estimates. Hispanic statewide rates of "exclusive" breastfeeding were 61.1% (56.1%, 66.1%) in the NIS and 29.7% (29.5%, 29.9%) in the CNS. Estimates for "exclusive" breastfeeding among non-Hispanic whites did not differ between the NIS and the CNS; estimates for exclusive breastfeeding among blacks differed only slightly, with an NIS estimate of 37.3% (23.9%, 50.7%)

TABLE 1. NATIONAL IMMUNIZATION SURVEY BREASTFEEDING QUESTIONS, 2006

1. Was [child's name] ever breastfed or fed breast milk?
2. How old was [child's name] when [child's name] completely stopped breastfeeding or being fed breast milk?
3. How old was [child's name] when (he/she) was first fed formula?
4. This next question is about the first thing that [child's name] was given other than breast milk or formula. Please include juice, cow's milk, sugar water, baby food, or anything else that [child's name] may have been given, even water. How old was [child's name] when (he/she) was first fed anything other than breast milk or formula?

TABLE 2. PREVALENCE OF “ANY” BREASTFEEDING AND “EXCLUSIVE” BREASTFEEDING IN THE NATIONWIDE IMMUNIZATION SURVEY AND THE CALIFORNIA NEWBORN SCREEN, BY RACE/ETHNICITY AND REGION

	“Any” breastfeeding rate				“Exclusive” breastfeeding rate			
	NIS		CNS		NIS		CNS	
	Estimate	CI	Estimate	CI	Estimate	CI	Estimate	CI
California	82.7	(79.6, 85.8)	86.1	(86.0, 86.2)	60.4	(56.6, 64.1)	41.6	(41.5, 41.7)
Race/ethnicity								
White (non-Hispanic)	81.7	(74.5, 88.9)	89.4	(89.3, 89.6)	63.8	(56.3, 71.2)	63.3	(63.0, 63.6)
Hispanic	85.0	(81.5, 88.6)	85.6	(85.5, 85.7)	61.1	(56.1, 66.1)	29.7	(29.5, 29.9)
Black	59.4	(44.5, 74.3)	72.7	(72.1, 73.2)	37.3	(23.9, 50.7)	31.7	(31.1, 32.2)
Region								
Los Angeles	83.1	(79.1, 87.1)	82.7	(82.5, 82.9)	56.0	(50.7, 61.2)	24.4	(24.2, 24.6)
San Diego	86.6	(82.5, 90.7)	90.4	(90.1, 90.7)	66.6	(61.4, 71.8)	52.0	(51.3, 52.7)

CI, confidence interval; CNS, California Newborn Screen (prospective hospital documentation by providers and/or parents); NIS, National Immunization Survey (retrospective telephone survey of parents).

and a CNS estimate of 31.7% (31.1%, 32.2%). Results of sensitivity analysis using NIS report of exclusive breastfeeding through 14 days were similar to primary results with an NIS estimate of exclusive breastfeeding statewide of 57.4% (53.6%, 61.1%) at 14 days and an NIS estimate of exclusive breastfeeding among Hispanics statewide of 58.1% (53.0%, 63.2%) at 14 days.

Discussion

NIS results and CNS results are similar for measurement of “any” breastfeeding but differ for measurement of “exclusive” breastfeeding. Statewide rates of “any” breastfeeding were 82.7% (79.6%, 85.8%) in the NIS and 86.1% (86.0%, 86.2%) in the CNS. Although these CIs do not overlap, the absolute difference between the measures is small. However, the absolute difference in measurement of “exclusive” breastfeeding is very large for the state as a whole and for several subgroups. For Hispanics and for the city of Los Angeles, estimates of “exclusive” breastfeeding in the NIS are double those of the CNS and differ on an absolute scale by more than 25 percentage points. Such a large discrepancy makes it difficult to assess progress toward public health goals, such as Healthy People and Joint Commission Perinatal Care Core measures, and to develop and plan public health and clinical interventions to improve population health and reduce health disparities. Federal and state officials should consider cooperating on a study to compare responses to the NIS and the CNS among different racial/ethnic groups.

The difference between the two measures in measurement of “exclusive” breastfeeding could result from poor parental recall of early formula use at the time of the NIS (19–35 months), poor accuracy of feeding data recorded by hospital staff while completing the newborn screen, misinterpretation of the survey questions by parents or hospital staff, or some other measurement factor such as maternal opinion that small amounts of early formula are not important. The literature in this area has consistently shown that maternal recall of early formula use is poor for mothers of children 6 months old or older.¹⁹ Bland et al.²⁰ found that mothers of infants 6–9 months old who stated that their infants had breastfed exclusively through 2 weeks were correct only 52% of the time.

Quandt^{21,22} found that only 58% of mothers interviewed at 6 months recalled correctly within 1 month when the infant had begun formula. Eaton-Evans²³ found that 42% of mothers of children 1–4 years old were not able to recall the introduction of non-breastmilk within 1 month. No available literature indicates that maternal recall at >6 months of early formula use is accurate.

The NIS may be overestimating exclusive breastfeeding rates because of poor maternal recall. However, if inpatient data collection processes are inaccurate, the CNS may be underestimating these rates. The disparity between the NIS and the CNS rates is consistent with results from the Infant Feeding Practices Study II, which used a 7-day food chart to improve maternal recall and found that of the 83% of infants who were breastfed in the hospital, 42% were supplemented with formula.²⁴ It is possible that recall rates in the NIS could be especially low for infants who received only a few formula feedings in the hospital. Validation of either measurement approach would be important for policymakers, clinicians, and researchers. Because the NIS already includes procedures for contacting primary care physicians to validate immunization data, it might be possible to validate NIS breastfeeding results for California infants by adding a procedure for contacting the primary care physician to determine oral intake as reported by parents at the first primary care appointment after hospital discharge. If this change were made for the NIS, it might also be possible for the CDPH to coordinate with the NIS to compare reported oral intake at the first primary care visit with CNS report of oral intake. If the NIS and the CDPH coordinated their efforts in this way, it might be possible to use primary care data to validate the NIS and/or the CNS and further explore any racial or ethnic differences in reporting.

Worldwide, there is no single standard for the measurement of breastfeeding rates; the World Health Organization uses a variety of national and local surveys to obtain estimates of breastfeeding rates. Suggested data sources for the Joint Commission Perinatal Care Core measurement of exclusive breastfeeding include use of feeding flow sheets, intake and output sheets, nursing notes, and physician progress notes, which may be similar to current CNS collection methods.²⁵ Therefore, some assessment of the accuracy of CNS measurement might potentially inform Joint Commission

measurement. Data collection for the CNS occurs contemporaneously with newborn screen and therefore might have less exposure to recall bias than the NIS.

The magnitude of the discrepancy between the two measures of exclusive breastfeeding is especially large for Hispanic infants and is relatively small for non-Hispanic black and non-Hispanic white infants. The discrepancies between ethnicities could result from numerous sources, including a translational error in the parent survey for the NIS, differential approach to data collection for the CNS among California hospitals with large Hispanic populations, or cultural understandings of small amounts of formula use that differ between the two populations. Further research into the role of race and ethnicity in breastfeeding measurement is needed to improve measurement of this important public health outcome.

Our study has several limitations. First, we do not have individual-level CNS data and instead used CNS data reported by hospital and county and by race/ethnicity. Therefore, we cannot match CNS and NIS results on an individual and cannot report individual-level agreement using coefficients such as κ . Even so, the large discrepancy between the two measures for assessment of “exclusive” breastfeeding demonstrates that our findings are important from a public health perspective. Second, infants who received breastmilk and water were classified as “exclusively breastfeeding” by the CNS but not “exclusively breastfeeding” by the NIS. If this had introduced bias into our study, we would have expected rates of “exclusive breastfeeding” to be higher in the CNS than in the NIS. In our study, rates of “exclusive breastfeeding” were lower in the CNS than in the NIS, so differential classification of water could not account for our results. Third, there is variation between hospitals in how CNS data are collected, including the exact timing of the assessment and the type of hospital personnel completing the questionnaire.¹² This variation could impact our results by affecting the accuracy of the CNS. However, differential misclassification bias is unlikely to have produced our results because CNS estimates of exclusive breastfeeding were lower than NIS estimates. Because exclusive breastfeeding is a public health goal, it is unlikely that hospital staff would have extensively differentially miscoded exclusively breastfeeding mothers as feeding both breastmilk and formula. Fourth, the infants sampled in 2006 NIS were born January 2003–January 2005, and our study examines CNS data covering infants born 2004 only. Therefore, our results from the NIS are not exactly applicable to all infants born in 2004. Nevertheless, most infants surveyed in the 2006 NIS were born in 2004, and also it is unlikely that actual breastfeeding patterns varied much within this period.

Existing data may be better at assessing public health goals on initiation and duration of breastfeeding than exclusive breastfeeding rates. It is also possible that small amounts of formula supplementation during hospitalization have little clinical relevance unless formula is continued after hospital discharge. A recent systematic review found no available evidence evaluating the impact of small, early amounts of formula on health outcomes.²⁶ Our study has shown that currently existing measures need further validation and refinement. The literature suggests that methods, such as the NIS, that query mothers about past breastfeeding practices are likely to have significant bias from inaccurate parental recall of early feeding practices, and the CNS is not a complete

measure of breastfeeding practice because it measures breastfeeding only during birth hospitalization. Improving measurement is important to assess progress toward Healthy People 2020 goals.

Possible options for improvement in measurement include focusing public health goals on “any” breastfeeding duration, contemporaneous measurement of breastfeeding practice at a variety of time points, and addition of prompt questions to the NIS. Because measurement of “any” breastfeeding appears to be more accurate than measurement of “exclusive” breastfeeding but exclusive breastfeeding is associated with the greatest health benefits, the development of valid exclusive breastfeeding measures is especially important. Contemporaneous measurement at 3, 6, and 12 months based on 24-hour recall could provide the most complete assessment of breastfeeding practice but would require a new survey approach, which could be prohibitively expensive. Addition of prompt questions such as “How much formula did your child receive (if any) during newborn hospitalization?” to the current NIS questions (Table 1) might improve our ability to quantify early formula use, but would probably not eliminate the recall difficulties demonstrated in the literature.

Conclusions

Either the NIS, the CNS, or both are inaccurate measures of “exclusive” breastfeeding. Relying on an inaccurate measure could lead to ineffective public health efforts to promote breastfeeding. Furthermore, racial and ethnic differences in measurement discrepancy may be harming public policy efforts to reduce infant health disparities. Improved measurement approaches would provide better understanding of newborn feeding practices and their impact on health disparities. Better understanding could help state and national public health agencies develop appropriate interventions for the right population at the right time in order to reach Healthy People and other public health goals for the future.

Acknowledgments

V.J.F.’s work on this project was supported by Career Development Awards from the National Center for Research Resources (KL2 RR024130) and the National Institute of Child Health and Human Development (5 K12 HD052 163 and 1K23HD059818-01A1). A.T.C. is supported by Career Development Awards from the Agency for Healthcare Research and Quality (K08 HS17146-01). R.A.D.’s work on this project was supported by an Investigator Award in Health Policy from the Robert Wood Johnson Foundation.

Disclosure Statement

No competing financial interests exist.

References

1. Kramer MS, Guo T, Platt RW, et al. Infant growth and health outcomes associated with 3 compared with 6 mo of exclusive breastfeeding. *Am J Clin Nutr* 2003;78:291–295.
2. Quigley MA, Kelly YJ, Sacker A. Breastfeeding and hospitalization for diarrheal and respiratory infection in the United Kingdom Millennium Cohort Study. *Pediatrics* 2007;119:e837–e842.

3. Beaudry M, Dufour R, Marcoux S. Relation between infant feeding and infections during the first six months of life. *J Pediatr* 1995;126:191–197.
4. Ip S, Chung M, Raman G, et al. *Breastfeeding and Maternal and Infant Outcomes in Developed Countries*. Agency for Healthcare Research and Quality, Rockville, MD, 2007.
5. Centers for Disease Control and Prevention. Healthy People 2010 Midcourse Review: Maternal, Infant and Child Health. www.healthypeople.gov/Data/midcourse/pdf/fa16.pdf (accessed August 1, 2008).
6. U.S. Department of Health and Human Services. *Healthy People 2010*. International Medical Publishing, McLean, VA, 2000.
7. U.S. Department of Health and Human Services. Developing Healthy People 2020—Maternal, Infant and Child Health. 2010. www.healthypeople.gov/hp2020/Objectives/ViewObjective.aspx?Id=177&TopicArea=Maternal%2c%20Infant%20and%20Child%20Health&Objective=MICH%20HP2020%20e2%80%9312&TopicAreaId=32 (accessed April 6, 2010).
8. Joint Commission. Perinatal Core Measures. 2010. [www.jointcommission.org/PerformanceMeasurement/PerformanceMeasurement/Perinatal + Care + Core + Measure + Set.htm](http://www.jointcommission.org/PerformanceMeasurement/PerformanceMeasurement/Perinatal%20Care%20Core%20Measure%20Set.htm) (accessed April 7, 2010).
9. Centers for Disease Control and Prevention. Racial and ethnic differences in breastfeeding initiation and duration, by state—National Immunization Survey, United States, 2004–2008. *MMWR Morb Mortal Wkly Rep* 2010;59:327–334.
10. Centers for Disease Control and Prevention. Breastfeeding trends and updated national health objectives for exclusive breastfeeding—United States, birth years 2000–2004. *MMWR Morb Mortal Wkly Rep* 2007;56:760–763.
11. Li R, Darling N, Maurice E, et al. Breastfeeding rates in the United States by characteristics of the child, mother, or family: The 2002 National Immunization Survey. *Pediatrics* 2005;115:e31–e37.
12. California WIC Association. CA Hospital Breastfeeding Report 2008. www.calwic.org/bfreport_2008.aspx (accessed November 14, 2008).
13. Smith PJ, Hoaglin DC, Battaglia MP, et al. Statistical methodology of the National Immunization Survey, 1994–2002. *Vital Health Stat* 2005;(138):1–55.
14. Centers for Disease Control and Prevention. NIS—Datasets and Related Documentation for the National Immunization Survey. 2008. www.cdc.gov/nis/data_files.htm (accessed January 17, 2008).
15. California Department of Public Health. Breastfeeding Statistics, Hospital Level Data Tables, Hospital of Occurrence by Race/Ethnicity, 2004. 2010. www.cdph.ca.gov/data/statistics/Documents/MO-Hospital-xRaceEthnicityReport2004inExcel.xls (accessed July 1, 2008).
16. California Department of Public Health. www.cdph.ca.gov/programs/nbs/Pages/NBSProgrOVforProviders.aspx (accessed May 14, 2009).
17. Datar A, Sood N. Impact of postpartum hospital-stay legislation on newborn length of stay, readmission, and mortality in California. *Pediatrics* 2006;118:63–72.
18. Centers for Disease Control and Prevention, National Center for Immunizations and Respiratory Diseases, National Center for Health Statistics. *National Immunization Survey: A User's Guide for the 2006 Public-Use Data File*. Centers for Disease Control and Prevention, Atlanta, 2008. [ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NIS/NISPUF06_DUG.pdf](http://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NIS/NISPUF06_DUG.pdf) (accessed January 17, 2008).
19. Li R, Scanlon KS, Serdula MK. The validity and reliability of maternal recall of breastfeeding practice. *Nutr Rev* 2005;63:103–110.
20. Bland RM, Rollins NC, Solarsh G, et al. Maternal recall of exclusive breast feeding duration. *Arch Dis Child* 2003;88:778–783.
21. Quandt SA. Patterns of variation in breast-feeding behaviors. *Soc Sci Med* 1986;23:445–453.
22. Quandt SA. Biological and behavioral predictors of exclusive breastfeeding duration. *Med Anthropol* 1985;9:139–151.
23. Eaton-Evans J, Dugdale AE. Recall by mothers of the birth weights and feeding of their children. *Hum Nutr Appl Nutr* 1986;40:171–175.
24. Grummer-Strawn LM, Scanlon KS, Fein SB. Infant feeding and feeding transitions during the first year of life. *Pediatrics* 2008;122(Suppl 2):S36–S42.
25. Joint Commission. Specifications Manual for Joint Commission National Quality Core Measures. 2010. manual.jointcommission.org/releases/TJC2010A1/MIF0170.html (accessed April 7, 2010).
26. Horvath A, Koletzko B, Kalisz M, et al. The effect of supplemental fluids or feedings during the first days of life on the success and duration of breastfeeding: A systematic review of randomized controlled trials. *Arch Pediatr Adolesc Med* 2005;159:597–598.

Address correspondence to:
 Valerie J. Flaherman, M.D., MPH
 Department of Pediatrics
 University of California, San Francisco
 Box 0503
 3333 California Street
 San Francisco, CA 94143-0503

E-mail: FlahermanV@peds.ucsf.edu