# Disparities in the National Prevalence of a Quality Medical Home for Children With Asthma

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**Objective.**—The aim of this study was to examine sociodemographic disparities in having a quality medical home among a nationally representative sample of children with asthma.

**Methods.**—The study examined data from the 2003 National Survey of Children's Health to identify 8360 children aged 2–17 years with asthma. Risk factors including nonwhite race/ethnicity, income <200% of the federal poverty level (FPL), uninsured, parent education less than high school, and non-English language, were examined individually and as a profile of risk in relation to a quality medical home. Fourteen questions were used to measure 5 medical home features: access, continuity, comprehensiveness, family-centered care, and coordination. A poorer quality medical home was defined as ≤66 on a 100-point scale—corresponding to the feature being present less than "usually"—for each feature and for an overall score.

**Results.**—Before and after adjustment for demographics and asthma difficulties, most risks except less than high school parent education were related to a poorer quality medical home. Uninsured children had the highest odds of a poorer quality medical home overall (adjusted odds ratio [OR] 5.19, 95% confidence interval [CI] 3.52–7.65) and across most features, except for coordination. Children experiencing 3+ risks had 8.56 times the odds of a poorer quality medical home overall (95% CI 4.95–14.78) versus zero risks.

**Conclusions.**—This study demonstrates large national disparities in a quality medical home for children with asthma. That disparities were most prevalent for the uninsured (insurance being a modifiable risk factor) suggests increasing coverage is essential to assuring that children obtain a quality medical home.

**KEY WORDS:** access to care; asthma; children; medical home; primary care

As many as 6.5 million children in the United States (or 8.9% of all children 0–18 years) have been diagnosed with asthma and are reported to currently have the disease.[1] The burden of asthma in childhood is tremendous, accounting for about 754 000 emergency department visits and 198 000 hospitalizations each year, and costing more than $850 million annually.[2] This burden is greater for vulnerable children, where rates of emergency visits and hospitalizations are double or triple among the poor, racial/ethnic minorities, and the uninsured.[3–5]

Recent guidelines of the National Asthma Education and Preventive Program (NAEPP) continue to emphasize the importance of children with asthma having an ongoing relationship with a medical home to make sure that they receive basic high-quality asthma care. The ongoing relationship is thought to allow for better monitoring and management of the condition and the provider to play a better coordinating role when the child requires care from one or more specialists. This is important, as studies have found that although providers are aware of asthma guidelines by NAEPP, there are considerable deficits in the prescription and use of preventive medications, adoption of patient self-management tools, and the effective coordination of care with specialists, families, and schools.[6–8] These elements of care may be more effectively delivered in a practice that adopts the features of a medical home.[9]

Despite these national efforts to promote a medical home, and the existence of a national survey of children to assess the quality of a medical home, no studies have yet examined the extent to which a nationally representative sample of children with asthma has obtained a quality medical home, or how the ability to obtain a medical home may vary by family sociodemographics. It is likely that there are disparities, as prior studies among children with asthma revealed racial/ethnic, income, and insurance disparities in having a regular source of care, which is a necessary but not sufficient condition for a quality medical home.[10,11] Data regarding disparities in the medical home for children with asthma are needed to establish baselines for monitoring trends in medical home quality, targeting interventions to increase access to a medical home, and improving asthma outcomes.

The current study generally builds on previous analyses of disparities in the prevalence of a medical home among children with special health care needs.[12–15] We use data from the 2003 National Survey of Children's Health (NSCH) to examine the prevalence of having a quality medical home in a nationally representative sample of children with

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a current diagnosis of asthma. The study assesses whether there are differences in having a quality medical home according to a set of demographic risk factors for poor heath care access and quality, based on race/ethnicity, poverty status, insurance status, parent education level and language. The experiences of children with multiple risk factors are analyzed using a "risk profile" index that was previously developed for vulnerable children.

## METHODS

### Data Source and Sampling

This study uses nationally representative data from the NSCH conducted by the National Center for Health Statistics and the Federal Maternal and Child Health Bureau. The NSCH was carried out from January 2003 to July 2004 as a module of the State and Local Area Integrated Telephone Survey, which employs a random digit-dial sample of households. It contains 102 353 completed interviews obtained with a final response rate of 55.3% (the product of the resolution, screener, and questionnaire completion rates). Households with at least 1 child aged <18 years were eligible, and 1 child was selected at random as the subject of the interview. The adult most knowledgeable about the child's health responded to the interview; in 96% of the interviews, this was one of the child's parents. Interviews in Spanish were completed for 5.9% of all respondents. More information is available in a methodology report.[16]

Children were included in our study only if they were aged ≥2 years (as asthma is difficult to diagnose among children aged <2 years), reported ever having been told they had asthma by a doctor or health professional, and if the child "still has asthma." In the sample, 11 749 children aged ≥2 years (or 13.2% of the national population of children this age) had ever been diagnosed with asthma, and 8360 (or 9.4%)—our final analytic sample—reported still having asthma. Survey weights were used to obtain national estimates for all analyses.

### Measures

#### Child Risk Factors

This study examines 5 child risk factors for poor health care access and quality. They are based on child race/ethnicity, family poverty status, child health insurance coverage, parent education level, and family language spoken at home. The categories considered to be "risk" were 1) nonwhite race/ethnicity, 2) income <200% of the federal poverty level (FPL) as calculated from reported family income and size by NSCH staff and coded to match the guidelines for poverty classification based on census thresholds, 3) child uninsured status, 4) highest household education level less than high school, and 5) not speaking English at home.

#### Child Risk Profiles

The risk factors are also combined into an index of risk or "risk profile" that is a simple count of the co-occurring risk

factors. The risk profile ranges from zero (a child with no risk factors) to 3+ (child has 3, 4, or 5 risk factors, combined to assure a sufficient sample size). The profile does not take into account the varying contributions of the individual risk factors to medical home quality (eg, if insurance is more strongly associated with medical home quality than race/ethnicity), but is presented this way for simplicity of interpretation. Risk profiles have been used in this way previously to investigate health care access and quality.[17–20]

#### Medical Home Features

The American Academy of Pediatrics describes 7 key features of a medical home: a medical home should be accessible, continuous, comprehensive, coordinated, family centered, compassionate, and culturally effective.[21] Five features are included in this study: accessibility, continuity, comprehensiveness, family-centered care, and coordination of care. The NSCH also assessed culturally effective care for the 2% of respondents who needed a medical interpreter, but we did not include this measure because of the very small sample size.

Each of the 5 medical home features was measured using 1 to 4 survey questions (see Appendix for questions and frequencies). Each question was assigned a score from 0 to 100, with 100 reflecting the best possible medical home. For questions with dichotomous responses, scores were no = 0, yes = 100. For questions with 4 Likert-type responses, the following scores were assigned: never = 0, sometimes = 33, usually = 67, and always = 100. A feature score was computed as the average of all nonmissing responses for that feature.

Half the questions for a given feature must have been answered to compute a summary value; if unanswered, the feature score was coded as missing. For example, the comprehensiveness feature is based on 3 questions about receiving needed care. If the response was yes (score = 100) to "receiving all needed medical care," no (score = 0) to "receiving all routine preventive dental care," and missing for "receiving all need prescriptions" (score = missing), the child's score for this feature was based on the average of the 2 nonmissing scores (100 + 0/2 gives a score of 50).

It should be noted that 2 medical home features were not applicable to certain children. Approximately 12% of children with asthma did not have a personal doctor and thus skipped all questions on family-centered care and coordination of care. An additional 46% had a regular source of care but did not need to see a specialist or need special equipment. These children (the 12% with no regular source of care and the 46% not needing to see a specialist or require special equipment, a total of 58% of all children in the sample) were not asked questions about coordination.

#### Medical Home Total Score

A total medical home score was calculated by averaging all nonmissing feature scores (ie, an average of the averages). The total score was based *at a minimum* on the 3 medical home features to which all individuals responded—accessibility, continuity, and comprehensiveness. Of all children in