

Medical Homes for Children in Iowa

Results from the 2010 Iowa Child and
Family Household Health Survey

Public Policy Center
The University of Iowa

Iowa Department of Public Health

Child Health Specialty Clinics

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A report from the 2010 Iowa Child and Family Household Health Survey to the Iowa Department of Public Health

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Background

In 2002, the American Academy of Pediatrics (AAP) defined a patient centered medical home (PCMH) as a method of care delivery by physicians that is accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective.¹ The PCMH, which is also known simply as a medical home, is especially important for children with special health care needs (CSHCNs) whose requirements for care are beyond those for other children and who could particularly benefit from the service coordination available in a medical home.

The information in this brief regarding the factors related to whether or not children in Iowa were receiving care that met the definition of a medical home comes from the 2010 Iowa Child and Family Household Health Survey (IHHS). The IHHS is a population-based survey of children and families in Iowa that investigates a broad set of issues regarding the health and well-being of children in Iowa. Questions about the presence of a medical home were added to the 2010 survey to evaluate the quality and comprehensiveness of the care of children in Iowa, especially for those most in need.

Evidence of the importance of a medical home for children has been mounting², particularly for CSHCNs³. Having a medical home has been associated with increased parent satisfaction⁴, decreased emergency department utilization⁵⁻⁶, lower rates of hospitalization⁶⁻⁷, and more preventive care⁸. So, it is not surprising that increasing access to a medical home has been identified as a priority for child health policy in the US Department of Health and Human Services' *Healthy People 2020* which states the objective

¹ American Academy of Pediatrics, Medical Home Initiatives for Children with Special Health Care Needs Project Advisory Committee. Policy statement: The medical home. *Pediatrics*. 2002;110:184-91.

² Hadland SE & Long WE. A systematic review of the medical home for children without special health care needs. *Maternal and Child Health Journal*. 2013; DOI 10.1007/s10995-013-1315-9.

³ Homer CJ, Klatka K, Romm D, et al. A review of the evidence for the medical home for children with special health care needs. *Pediatrics*. 2008;122(4):e922-e937.

⁴ Wood DL, McCaskill QE, Winterbauer N, Jobli E, Hou T, Wludyka P, Stowers K, Livengood W. A multi-method assessment of satisfaction with services in the medical home by parents of children and youth with special health care needs (CYSHCN). *Maternal Child Health Journal*. 2009;13:5-17.

⁵ Homer CJ, Forbes P, Horvitz L, et al. Impact of a quality improvement program on care and outcomes for children with asthma. *Archives of Pediatrics and Adolescent Medicine*. 2005;159(5):464-469.

⁶ Cooley WC, McAllister JW, Sherrieb K, Kuhlthau K. Improved outcomes associated with medical home implementation in pediatric primary care. *Pediatrics*. 2009;124:358-364.

⁷ Christakis DA, Mell L, Koepsell TD, et al. Association of lower continuity of care with greater risk of emergency department use and hospitalization in children. *Pediatrics*. 2001;107(3):524-529.

⁸ Romaine MA and Bell JF. The medical home, preventive care screenings, and counseling for children: Evidence from the Medical Expenditure Panel Survey. *Academic Pediatrics*. 2010;10(5):338-45.

to “increase the proportion of children, including those with special health care needs, who have access to a medical home.”⁹

Additionally, the health reform law known as the Patient Protection and Affordable Care Act (ACA) provides ways that states can expand upon current efforts to implement PCMHs. One example, the ACA established a Medicaid state option to provide primary care in a medical home (also known as “health home”) to adults and children with chronic conditions. In 2012, the Iowa Medicaid Enterprise, the administrators of the Iowa Medicaid program, was approved under a State Plan Amendment to begin enrolling fee-for-service Medicaid enrollees (including children) with complex chronic conditions into primary care-based health homes in an effort to help coordinate and provide “whole-person” care for Medicaid enrollees, with additional support for their families.

Another step toward establishing medical homes for Medicaid enrollees will be through Iowa’s Medicaid expansion program called the Iowa Health and Wellness Plan. The goal of the PCP, ACO, and managed care plans is to ensure that participant care is coordinated to the greatest extent possible to help create efficiencies and improve the quality of individual health care. PCPs will be compensated with a coordinated care fee for managing enrollee care. Managed care plans will receive per member per month capitation.

Care coordination, an important component of the medical home, is also highlighted throughout the ACA and in other health reform efforts. As part of the ACA, the federal government can provide grants to states or state-designated entities to establish community-based interdisciplinary, inter-professional health teams to support primary care practices with the care management and coordination for patients with complex health needs. In Iowa, care coordination and management will be part of the efforts (in both private and public sectors) to develop accountable care organizations (ACOs). As ACOs develop across the state, the ability to coordinate care across delivery systems for children with chronic health conditions will become a way for these entities to generate cost savings through reductions in emergency department visits, hospitalizations, etc. Large ACOs will likely use in-house sources to coordinate care. For smaller entities, the Iowa Legislature has provided funding to support care community care coordination initiatives designed to meet the unique needs of high risk populations such as CSHCN, especially for safety net, rural, small, and independent providers. The Iowa

⁹ U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2020. Washington, DC. Available at <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26> Accessed August 9, 2013.



Primary Care Association (Iowa PCA) is currently accepting letters of intent from entities who wish to provide such support to primary care providers.

This policy brief highlights the proportion of children in Iowa who have received health care services within the past 12 months that met the definition of a medical home. We also examined the association between having a medical home with a variety of child and family sociodemographic and health status characteristics, including having a special health care need, to better understand the gaps in the quality and comprehensiveness of care for children in Iowa.

Methods

The IHHS is a collaborative effort of the Iowa Department of Public Health, the University of Iowa Public Policy Center, and the Iowa Child Health Specialty Clinics. The 2010 survey was conducted with almost 2400 Iowa families in fall 2010 – spring 2011. Address-based sampling (ABS) was used to select the families statewide that were invited to participate in the study. Data collection was completed using mixed-mode telephone and Internet survey methods.

During the core data collection period, 1,859 phone and 527 online interviews took place with the parent or guardian of one randomly selected child age 0-17 living in the household. Respondents were primarily mothers (78%), although 16% were fathers. The data were weighted to account for family size and post-stratified to reflect the 2010 child population in Iowa. Included in this report are results representative of children and adolescents in Iowa and their parents (n=2,386). There were almost equal numbers of boys (51%) and girls (49%) in the sample. The age distribution, poverty level, and race/ethnicity of the children in the sample are shown in Table 1.

Table 1. Demographic characteristics of the children and their families from whom data were collected (weighted sample)

Child age	Percentage
0-5 years	33%
6-12 years	39%
13-17 years	28%
Sex	
Female	49%
Male	51%
Federal Poverty Level (FPL) status	
<134%FPL	12%
134-199% FPL	16%
200-299% FPL	23%
300+% FPL	49%
Child race/ethnicity^a	
African-American (non-Hispanic)	5%
White (non-Hispanic)	92%
Spanish/Hispanic	7%

^aRacial groups collected in the questionnaire were: African-Americans, Whites, Asians or Pacific Islanders, American Indians or Native Americans, and Other. The question allowed the respondent the ability to choose multiple races, thus the percentage totaled more than 100%.

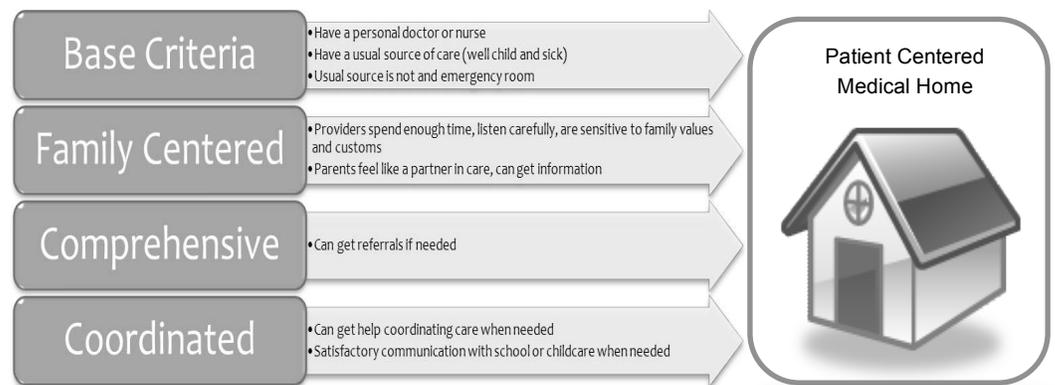
Identification of a medical home

There is no “gold standard” for identifying whether or not someone has a care that meets the definition of a medical home because the measurement of this multi-faceted concept is complex and, as yet, there is no national consensus on a survey-based instrument for this purpose. In the IHHS, we used 17 survey questions from the 2005-2006 National Survey of Children with Special Health Care Needs (NS-CSHCN) and the 2007 National Survey of Children’s Health (NSCH) to tap several of the conceptual components of the AAP definition of the medical home.¹⁰ Appendix A provides the exact wording of the medical home survey items.

¹⁰ U.S. Department of Health and Human Services. Centers for Disease Control and Prevention. National Center for Health Statistics. *Measuring Medical Home for Children and Youth: Methods and Findings from the National Survey of Children with Special Health Care Needs and the National Survey of Children’s Health*. CDC PO #300614801-01. May 2009

To identify whether or not a respondent's child received services from a practice whose care met the definition of a medical home, we derived a composite medical home measure based on a scoring algorithm from the 2005-6 NS-CSHCN. Appendix B provides the medical home concept, the related survey items, and the response criteria for whether or not a child has that particular component of a medical home. In sum, the respondent's child was identified as having a medical home if the child had well-child or sick medical care at some time during the past 12 months and had all of the following baseline criteria: a) at least one personal doctor/nurse, b) had a usual source of care for sick and preventive care, and c) that usual source of care was not in an emergency room. In addition to meeting all of these baseline criteria, the child must also have met the subcomponent criteria: having family centered, comprehensive (if referrals needed), and coordinated care (if care coordination needed). Failing to meet even one of the three minimum baseline criteria would categorize the child as not having a medical home, regardless of responses to the subcomponent questions. And, even if the child met all three of the minimum baseline criteria but did not meet the criteria on even one of the three subcomponent criteria, the child would be categorized as not having a medical home. For children who did not need medical care (well-child or sick) in the past 12 months, they met the criteria for having a medical home if all three baseline criteria were met. Children without need for care in the past year would not have been asked about the subcomponent questions since they would not have needed family centered, comprehensive, and coordinated care. Figure 1 provides a graphical representation of these criteria.

Figure 1. Criteria defining the medical home measure in the 2010 IHHS



Factors considered to be related to having a medical home

For this report, we investigated whether three sets of factors were related to whether or not a child had a medical home: characteristics of the child, the child's environment, and of the child's parent.

The primary child characteristic we included in these analyses was whether or not the child had a special health care need. We used a CSHCN screening tool developed by the Child and Adolescent Health Measurement Initiative¹¹ to determine CSHCN status. Children who met any of the following criteria because of a condition that was expected to last at least 12 months were considered to have a special health care need: 1) child needs or uses medicine prescribed by a doctor, 2) child needs or uses more medical care, mental health, or educational services than is usual for most children of the same age, 3) child is limited or prevented in his or her ability to do the things most children of the same age can do, 4) child needs or gets special therapy such as physical, occupational, or speech therapy, or 5) child has any kind of emotional, developmental, or behavioral problem for which he or she needs or gets treatment or counseling. We also included the child demographic characteristics of age (0 to 5 years, 6 to 12 years, and 13 to 17 years) and race/ethnicity (African-American non-Hispanic, White non-Hispanic, Latino/Hispanic – all races, or Other which included Asian, American Indian, Alaskan Native, or Pacific Islander) in the analyses.

Characteristics indicative of the child's environment included federal poverty level of the household, geographic status of the residence, the child's insurance status, and an indicator of what kind of neighborhood support is available to the household. Federal poverty level was categorized as being ≤ 133% of FPL, 134 – 199% of FPL, 200 – 299% of FPL, or 300% or more. The child's residence was considered to be urban or mostly urban if he or she lived in a county with an urban population of at least 20,000.¹²⁻¹³ For insurance status, a child was considered to have private insurance, public insurance (i.e., Medicaid, *hawk-i*, or Veteran's Administration), or had neither and was categorized as uninsured. Finally, we determined whether or not a child lived in a supportive neighborhood environment, identified by using a 4-item measure from 2007 National Survey of Children's Health (CDC-2007 NSCH).¹⁴ The neighborhood was considered "supportive" if the respondent answered "Agree" to at least three of the following items: 1) People in my neighborhood help each other out, 2) We watch out for each other's children in this neighborhood, 3) There are people I can count on in this neighborhood, and 4) If my child

¹¹ Bethell CD, Read D, Stein R, Blumberg S, Newacheck P. Identifying children with special health care needs: Development and evaluation of a short screening tool. *Ambulatory Pediatrics*. 2002;2:38-47.

¹² USDA Economic Research Service. 2003 Rural-Urban continuum codes. Available at: http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#_U0B0HfO7gc

¹³ Artz, G. M., & Orazem, P. (2005). Reexamining rural decline: How changing rural classifications affect perceived growth. Stillwater, Okla.: Review of Regional Studies.

¹⁴ CDC: 2007 National Survey of Children's Health, survey instrument. Available at: <http://www.cdc.gov/nchs/slait/nsch.htm#2007nsch>

were outside playing and got hurt or scared, there are adults nearby who I trust to help my child.

Demographic characteristics of the child's responding parent included the age of the parent (under 25, 26-55, or over 55) and the highest level of completed education (high school or less, some college, or 4-year college graduate or more). In addition, we also evaluated parental stress/aggravation and mental health status. Parental stress/aggravation was assessed using a measure of parent aggravation that was adapted by the National Survey of American Families from the evaluation of the Job Opportunities and Basic Skills (JOBS) program.¹⁵ It includes four questions asking how much of the time during the past month the parent: 1) felt their child was much harder to care for than most, 2) felt their child did things that really bothered them a lot, 3) felt they were giving up more of their life to meet their child's needs than ever expected, and 4) felt angry with their child. Response categories included "all of the time", "most of the time", "some of the time", or "none of the time." The responses to the four-item scale were summed for a total of 16 points, with higher scores indicating lower parenting stress. Scores less than or equal to 11 indicated high levels of parenting stress, scores equal to 16 indicated low levels of parenting stress, and scores from 12-15 indicated moderate parenting stress. Finally, parental mental health was evaluated using 5 items asking how much of the time (all, most, some, or none) during the past month the parent: 1) had been a very nervous person, 2) felt calm or peaceful, 3) felt downhearted and blue, 4) had been a happy person, and 5) felt so down in the dumps that nothing could cheer them up. Responses were summed and multiplied by five to create a scale with scores ranging from 25 to 100. Higher scores indicated better mental health. Scores of 67 or lower indicated poor mental health with scores over 67 indicating normal mental health.

Analytic Methods

All analyses were conducted using SPSS. Descriptive data include means and percentages. Chi-square tests were conducted to evaluate differences in medical home access for each child, household, and parental characteristic. In order to understand which characteristics have the strongest effect on whether or not a child has a medical home, we used multivariable logistic regression to simultaneously identify which child, household, and parental characteristics are associated with a child having a medical home.

¹⁵ Ehrle J and Anderson Moore K. 1997 NSAF Benchmarking Measures of Child and Family Well-Being: Report No. 6. The Urban Institute: Washington, DC. Available at : http://www.urban.org/UploadedPDF/Methodology_6.pdf

Results

Characteristics of the Sample

The average age of the children in this sample was 9 (Standard deviation = 5.3) and the majority (87%) were white (non-Hispanic). A little over one-fifth of respondents reported having a child with special health care needs. Most children lived in an urban setting (65%) and in a relatively secure environment, with 97% having some form of health insurance. Fifty-four percent lived in a household at 300% or more above the FPL and 87% were growing up in a supportive neighborhood. The vast majority (93%) of the parent respondents were between the ages of 26 and 55 and most (81%) reported having at least some college education. Only 11% of parent respondents met the criteria for having poor mental health status and very few (5%) had a high level of aggravation or stress in parenting. Table 2 provides the child, household, and parental characteristics of the sample.

Table 2. Child, Household, and Parent characteristics.

Child		Household		Parent	
CSHCN	21%	Urban Residence	65%	Age (years)	
Age (years)		Insurance Status		Under 25	3%
0-5	28%	Private Insurance	77%	26-55	93%
6-12	37%	Public Insurance	21%	Over 55	4%
13-17	36%	No Insurance	3%	Education	
Race/Ethnicity		FPL Status		≤ High School	19%
African-American (non-Hispanic)	2%	≤ 133%	10%	Some College	36%
White (non-Hispanic)	87%	134% - 199%	13%	≥ College grad	45%
Hispanic/Latino (all races)	6%	200% - 299%	23%	Aggravation in Parenting	
Other ^a	2%	300% or more	54%	High	5%
		Supportive Neighborhood	87%	Moderate	63%
				Low	32%
				Poor Mental Health	11%

^a Includes Asians or Pacific Islanders, American Indians or Native Americans, and Other.

Medical home

Of the 2,340 respondents who completed the medical home questions, about 80% met the criteria for having a medical home. The vast majority (93%) reported that their child had a personal doctor or nurse and 97% reported that their child had a usual source of wellness and sick care. Of the subcomponents, 84% reported that they experienced family centered care while 87% reported no problem getting referrals when needed. Very few reported the need for extra help coordinating care or that their child's health care providers needed to communicate with other entities. However, of those who did (n=131), only 5% met the criteria for having good care coordination.

Individual factors related to whether a child had a medical home (Univariate analysis)

There were some significant differences in the proportion of children who had a medical home based on some of the demographic characteristics of the child (Table 3a). Children with a special health care need were less likely (71%) to have a medical home compared to children without a special health care need (82%). And, while there were no differences among the children by age group, there were differences based on race/ethnicity. Significantly more white children (81%) had a medical home as compared to African-American children (51%) with almost 70% of Hispanic children and three-quarters of children of other races having a medical home.

Children with special health care needs and African American children were less likely to have a medical home

Table 3a. Percent of Children with a Medical Home by Child Demographics

	Percent with a Medical Home
Child with Special Health Care Needs*	
No	82%
Yes	71%
Age in years	
0-5	82%
6-12	78%
13-17	80%
Race/Ethnicity*	
African-American (non-Hispanic)	51%
White (non-Hispanic)	81%
Hispanic/Latino (all races)	69%
Other ^a	75%

* Statistically significant difference at p<.05

^a Includes Asians or Pacific Islanders, American Indians or Native Americans, and all other.

With regard to the child’s household environment, those children with a higher socioeconomic status were most likely to have a medical home (identified by FPL status). Specifically, as household income level increased, so did the percentage of children with a medical home. Only two-thirds of children in households at $\leq 133\%$ FPL had a medical home and three-quarters of children in households between 134% and 199% FPL had a medical home, yet over 80% had a medical home in households at 200% or more of the FPL. Along with household income, having medical insurance may also enable children access to a medical home. In this sample, children with health insurance were more likely to have a medical home with over 80% of privately insured meeting the criteria for having a medical home, whereas only 70% of publicly insured, and only about 60% of uninsured children did so. There was no difference in proportion of children having a medical home between those with Medicaid and those enrolled in *hawk-i*. While there was no difference in medical home status between children in urban versus rural environments, there was a difference between children who lived in a supportive neighborhood (83%) and those who did not (63%). Table 3b provides the proportion of children with a medical home by different household characteristics.

Lower income children, those without insurance or with public insurance and those in less supportive neighborhoods were less likely to have a medical home

Table 3b. Percent of Children with a Medical Home by Household Characteristics

	Percent with a Medical Home
Federal Poverty Level Status*	
$\leq 133\%$	67%
134% - 199%	76%
200% - 299%	81%
300% or more	83%
Insurance Status*	
Private Insurance	83%
Public Insurance	69%
No Insurance	59%
Urban/Rural Residential Status	
Urban	81%
Rural	78%
Lives in a Supportive Neighborhood*	
Yes	83%
No	63%

*Statistically significant difference at $p < .05$

Whether or not a child had a medical home differed by the age of the parent, education, stress, and mental health status (Table 3c). Nearly 70% of children of young parents (under 25) and 75% of children of older (over 55) parents had a medical home but significantly more children of parents aged 26 – 55 had a medical home (80%). Children with a parent who had at least some college education were more likely to have a medical home (at least 80%) compared to those with parents who did not go to college (71%). The vast majority of children with parents who reported low parental aggravation (86%) had a medical home compared to only 60% for children with parents who have high levels of aggravation. Finally, less than two-thirds of children whose parents have poor mental health have a medical home compared to over 80% when parents have normal mental health.

Table 3c. Percent of Children with a Medical Home by Parental Characteristics

	Percent with a Medical Home
Age*	
Under 25	69%
26-55	80%
Over 55	75%
Education*	
High School or Less	71%
Some College	80%
4 or More Years of College	83%
Aggravation in Parenting*	
High	60%
Moderate	79%
Low	86%
Mental Health Status*	
Poor	63%
Normal	82%

* Statistically significant difference at $p < .05$

Most important factors affecting having a medical home for children (multivariable logistic regression)

When all characteristics (child, household, and parent) were put in a model together to predict the odds of having a medical home, several characteristics had prominent effects. After adjusting for all of the other characteristics, children with a special health care need, African American children (compared to white), uninsured and children with public insurance (compared to private

Children with parents who were younger, less educated, more aggravated, and had lower mental health status were less likely to have a medical home

After controlling for other factors, children with special health care needs still were less likely to have a medical home

insurance), households without supportive neighborhoods, parents less than 25 (compared to parents 26-55 years old), parents who had moderate to high aggravation in parenting (compared to low), and parents with poor mental health status had lower odds of having a child with a medical home (Table 4a). Table 1 in Appendix C provides more statistical details (odds ratios, 95% confidence intervals, and statistical significance) for each of the characteristics included in this model.

Table 4a. Results of the Multivariable Logistic Regression predicting the Odds of Having a Medical Home (n=2,008^a)

	Odds Ratio	95% Confidence Interval
Child with Special Health Care Needs	0.72 *	0.54, 0.95
Race of Child (Compared to non-Hispanic White)		
African-American (non-Hispanic)	0.42 *	0.20, 0.92
Hispanic/Latino (all races)	0.81	0.50, 1.29
Other ^b	0.78	0.34, 1.77
Insurance Status (Compared to Private)		
Uninsured	0.36 †	0.18, 0.68
Public	0.62 †	0.44, 0.87
Does not live in a Supportive Neighborhood	0.51 ‡	0.38, 0.70
Parental Age (Compared to 26-55 years)		
Under 25	0.53 *	0.28, 0.98
Over 55	1.40	0.71, 2.74
Aggravation in Parenting (Compared to Low)		
High	0.48 †	0.29, 0.80
Moderate	0.68 †	0.52, 0.90
Poor Parental Mental Health	0.65 †	0.46, 0.92

^a Does not match complete sample of 2,386 because of missing data on some items.

^b Includes Asians or Pacific Islanders, American Indians or Native Americans, and all other.

* p < 0.05 (significant)

† p < 0.01 (highly significant)

‡ p < 0.001 (very highly significant)

CSCHN vs Non-CSHCN

Because we found that CSHCN were less likely to have a medical home, we examined the factors related to having a medical home for children WITH a special health care need separately from children WITHOUT a special health care need to determine which characteristics mattered most for each group of children. For the CSHCN, the most important factors that decreased the odds of having a medical home were parental aggravation (high and moderate), not living in a supportive neighborhood and African American race (compared to white) (Table 4b). None of the other characteristics were significant for this group of children who are most in need of the services provided by a medical home.

Table 4b. Significant Factors Predicting the Odds of Having a Medical Home for the subset of Children WITH a SHCN (n=429)

	Odds Ratio	95% Confidence Interval
Race of Child (Compared to non-Hispanic White)		
African-American (non-Hispanic)	0.21 *	0.05, 0.90
Hispanic/Latino (all races)	0.73	0.28, 1.94
Other ^a	0.78	0.34, 1.77
Does not live in a Supportive Neighborhood	0.53 *	0.30, 0.93
Aggravation in Parenting (Compared to Low)		
High	0.19 ‡	0.08, 0.47
Moderate	0.38 *	0.18, 0.82

^a Includes Asians or Pacific Islanders, American Indians or Native Americans, and all other.

* p < 0.05 (significant)

† p < 0.01 (highly significant)

‡ p < 0.001 (very highly significant)

For the group of children without a SHCN, children who were male, uninsured or publicly insured, did not live in a supportive neighborhood environment, had a parent with at most a high school education, or had a parent with poor mental health had the lowest odds of having a medical home (Table 4c). Table 2a and Table 2b in Appendix C include additional statistical details about the other factors included in these two subgroup models that were not significantly related to having a medical home.

Among children with special health care needs, African American children, those living in less supportive neighborhoods and those with parents with higher parenting aggravation were less likely to have a medical home

Among children without a special health care needs, being uninsured or having public insurance, not living in a supportive neighborhood, and having a parent with less education and lower mental health status were less likely to have a medical home

Table 4c. Significant Factors Predicting the Odds of Having a Medical Home for the subset of Children without SHCN (n=1,579)

	Odds Ratio	95% Confidence Interval
Male Child	0.73 *	0.55, 0.95
Insurance Status (Compared to Private)		
Uninsured	0.30 †	0.15, 0.62
Public	0.53 †	0.35, 0.81
Does not live in a Supportive Neighborhood	0.50 ‡	0.34, 0.72
Parental Education (Compared to ≥ 4 years of college)		
High School or less	0.57 †	0.38, 0.84
Some College	0.73	0.53, 1.01
Poor Parental Mental Health	0.64 *	0.41, 0.98

* p < 0.05 (significant)
 † p < 0.01 (highly significant)
 ‡ p < 0.001 (very highly significant)

Conclusions

The finding from this study that raises the most concern is that children with special health care needs are significantly less likely to have a medical home than other children. This is particularly important because the historical foundations of the medical home were based on providing better care specifically for these children who, because of their unique and complex health care needs, would particularly benefit from the continuous, comprehensive, family-centered, and coordinated care that are hallmarks of a medical home. We examined this finding more extensively by looking at characteristics affecting medical home access for CSHCN separately from the rest of the children in the sample.

For the few children in this survey who required care coordination (i.e. children with more serious health issues), very few parents reported receiving adequate help arranging their child’s care or satisfaction with how their providers communicated their child’s needs to other entities caring for the child (e.g., school environments). Care coordination and communication for children with special health needs is an area for improvement if the goal of providing a medical home for all of Iowa’s children is to be met by 2020.



African American children were another at risk population less likely to have a medical home, as were children from families with lower socioeconomic status (as measured by FPL and insurance status), and children/families who lived in less supportive neighborhood environments. A unique component of this report is that we were able to examine how parental factors might influence a child's access to a medical home. Younger parents, parents who experienced moderate to high levels of aggravation with parenting, and those parents who self-reported poor mental health status were the least likely to have children with a medical home.

Among children with a special health care need, the factor most highly associated with whether or not the child had a medical home was the aggravation/stress levels experienced by their parents. Those whose parents experienced high aggravation in parenting were the very least likely to have a medical home. There are a couple of possible reasons for this finding: a) parents who had the most challenging parenting situations (having a special needs child) were least able to seek out a medical arrangement for their child that provided care in a comprehensive manner, and/or b) these parents had more aggravation in part because their child's health care needs were not being provided in a coordinated manner which is much more important for a CSHCN. Parental aggravation levels were not a factor relating to having a medical home for children without special health care needs. For those children, having private health insurance, parents with more than a high school education, and living in supportive neighborhood were most associated with the child having a medical home.

The other results of this survey with regard to the medical home status of children in Iowa are fairly consistent with other reports. Overall, the majority of children (80%) receive care in settings that provide the main components of a medical home.

Children in Iowa are highly likely to have a personal doctor or nurse and their parents can identify that they have a usual source of health care. In addition, the majority of children experience family-centered care and do not have problems getting referrals for other care when needed.

These results have several implications for statewide efforts to implement health reform initiatives such as the dissemination of PCMHs. It is clear that care coordination and communication among providers is an essential component of the medical home, especially for children with complex needs. Yet, in this survey, while very few parents replied their child had need care coordination, for those who did, they were not satisfied with the care coordination services available to them. So, the increased emphasis on quality



care coordination through ACO development and efforts to establish community care teams across the state is especially timely for children in Iowa.

Insurance status was an important factor affecting a child's access to a medical home with uninsured and children with public insurance least likely to have one. With the implementation of the Medicaid Health Home for children with chronic illness, there could be an improvement in access for CSHCN children in the Medicaid program. However to date, enrollment for children in the program has been low and thus may not reach as many children as hoped. Increased efforts to find medical homes for children in the Medicaid program are needed. Also, for CSHCN, higher levels of parenting stress was strongly associated with not having a medical home. Thus, targeted outreach by providers through health homes to parents of CSHCN who may be experiencing high stress levels may be one strategy to help CSHCN find medical homes.



Appendices

- A. Medical Home Questions from the 2010 IHHS Instrument
- B. Medical Home concepts, related survey items, and response criteria
- C. Complete Multivariable Logistic Regression Models

Appendix A: Medical Home Questions from the 2010 IHHS Instrument

Section 3A. Medical Home

MH1. A personal doctor or nurse is a health professional who knows your child well and is familiar with your child's health history. This can be a general doctor, a pediatrician, a specialist doctor, a nurse practitioner, or a physician's assistant. Do you have one or more persons you think of as [CHILD]'s personal doctor or nurse? Would you say...

- Yes, one person,..... 1
- Yes, more than one person, or 2
- No? 3

- DON'T KNOW** 7
- REFUSED** 9

[IF AN1 (needed medical care of any kind) = 2, 7, or 9, SKIP TO RX1]

MH2. [IF AGE >= 12 MONTHS OLD: During the last 12 months, **ELSE:** Since (his/her) birth], how often did [CHILD]'s doctors and other health care providers spend enough time with (him/her)? Would you say...

- Never,..... 1
- Sometimes, 2
- Usually, or..... 3
- Always?..... 4

- DON'T KNOW** 7
- REFUSED** 9

MH3. [IF AGE >= 12 MONTHS OLD: During the last 12 months, **ELSE:** Since (his/her) birth], how often did [CHILD]'s doctors and other health care providers listen carefully to you? Would you say...

- Never,..... 1
- Sometimes, 2
- Usually, or..... 3
- Always?..... 4

- DON'T KNOW** 7
- REFUSED** 9

MH4. [IF AGE >= 12 MONTHS OLD: During the last 12 months, **ELSE:** Since (his/her) birth], how often did [CHILD]'s doctors or other health care providers help you feel like a partner in (his/her) care? Would you say...

- Never,..... 1
- Sometimes, 2
- Usually, or..... 3

Always?.....4
DON'T KNOW7
REFUSED.....9

MH5. [IF AGE >= 12 MONTHS OLD: During the last 12 months, **ELSE:** Since (his/her) birth], how often did your child get an appointment for regular or routine health care as soon as you wanted? Would you say...

Never,..... 1
 Sometimes,2
 Usually, or.....3
 Always?.....4

DIDN'T NEED APPOINTMENT THE LAST 12 MONTHS.....5
DON'T KNOW7
REFUSED.....9

MH6. Information about a child's health or health care can include things such as the causes of any health problems, how to care for a child, and what changes to expect in the future.

[IF AGE >= 12 MONTHS OLD: During the last 12 months, **ELSE:** Since (his/her) birth], how often were you able to get all the information you wanted about [CHILD]'s health from (his/her) doctor as soon as you wanted? Would you say...

Never,..... 1
 Sometimes,2
 Usually, or.....3
 Always?.....4

DIDN'T GET INFO ABOUT CHILD'S HEALTH.....5
DON'T KNOW7
REFUSED.....9

[IF CSHCN=0 or AGE < 12, SKIP TO MH9]

MH7. Have [CHILD]'s doctors or other health care providers talked with you or [CHILD] about [his/her] health care needs as [he/she] becomes an adult?

Yes..... 1
 No.....2

DON'T KNOW7
REFUSED.....9

MH8. How often do [CHILD]'s doctors or other health care providers encourage [him/her] to take responsibility for [his/her] health care needs, such as taking medication, understanding a diagnosis, or following medical advice? Would you say ...

Never,..... 1
 Sometimes,2

Usually, or.....3
Always?.....4

DON'T KNOW7 **REFUSED** 9

MH9. [IF AGE >= 12 MONTHS OLD: During the last 12 months, ELSE: Since (his/her) birth], did [CHILD] need a referral to see any doctors or receive any services?

Yes.....1
No2 **[SKIP TO MH11]**

DON'T KNOW7 **[SKIP TO MH11]**
REFUSED.....9 **[SKIP TO MH11]**

MH10. Was getting a referral a big problem, a small problem, or not a problem?

A big problem.....1
A small problem2
Not a problem3

DON'T KNOW7
REFUSED.....9

MH11. Is there a place that [CHILD] USUALLY goes when (he/she) is sick or you need advice about (his/her) health?

Yes.....1
No2 **[SKIP TO MH13]**

DON'T KNOW7 **[SKIP TO MH13]**
REFUSED.....9 **[SKIP TO MH13]**

MH12. What kind of place is it? Is it a doctor's office, emergency room, hospital outpatient department, clinic, or some other place?

IF more than one place, SAY: What kind of place does [CHILD] go to most often?

Doctor's office11
Hospital emergency room.....12
Hospital outpatient clinic13
Clinic or health center14
School (nurse's office, athletic trainer's office, etc) 15
Friend/relative16
Mexico/other location out of US.....17
Some other place **[SPECIFY]**.....18

DOES NOT GO TO ONE PLACE MOST88
DON'T KNOW77
REFUSED.....99

MH13. Is there a place that [CHILD] USUALLY goes when (he/she) needs routine preventive care, such as a physical examination or well-child check-up?

READ IF NECESSARY: Clinical preventive care includes check-ups, immunizations, health screening tests, and discussions about how to keep your child healthy.

Yes..... 1 [IF MH11=2, 7, OR 9, SKIP TO MH15]
No 2 [SKIP TO MH16]

DON'T KNOW 7 [SKIP TO MH16]
REFUSED 9 [SKIP TO MH16]

MH14 [IF MH12=12, 17, 77 or 99, SKIP TO MH15]

Does [CHILD] usually go to the same place for routine preventive care as (he/she) goes to when (he/she) is sick?

Yes..... 1 [SKIP TO MH16]
No 2

DON'T KNOW 7 [SKIP TO MH16]
REFUSED 9 [SKIP TO MH16]

MH15. What kind of place does [CHILD] USUALLY go to when (he/she) needs routine preventive care?

IF MORE THAN ONE PLACE, SAY: What kind of place does [CHILD] go to most often when (he/she) needs routine preventive care?

Doctor's office 11
Hospital emergency room 12
Hospital outpatient clinic 13
Clinic or health center 14
School (nurse's office, athletic trainer's office, etc) 15
Friend/relative 16
Mexico/other location out of US 17
Some other place [SPECIFY] 18

DOES NOT GO TO ONE PLACE MOST OFTEN....88
DON'T KNOW77
REFUSED.....99

MH16.[IF AGE >= 12 MONTHS OLD: During the last 12 months, **ELSE:** Since (his/her) birth], did you feel you could have used extra help arranging or coordinating [CHILD]'s care among different health care providers or services?

Yes..... 1
No 2 [SKIP TO MH18]

DON'T KNOW7 [SKIP TO MH18]
REFUSED9 [SKIP TO MH18]

MH17. [IF AGE >= 12 MONTHS OLD: During the last 12 months, **ELSE:** Since (his/her) birth], how often did you get as much help as you wanted with arranging or coordinating [CHILD]'s care?

Would you say...

Never, 1
Sometimes, 2
Usually, or 3
Always? 4

DON'T KNOW7
REFUSED9

MH18. Do [CHILD]'s doctors or other health care providers need to communicate with (his/her)

[IF AGE < 3 years: child care providers or early intervention program?]

[IF AGE ≥ 3 AND < 6 Years: child care providers, school, or special education program?]

[IF AGE ≥ 6 Years AND CHILD DOES NOT HAVE SPECIAL HEALTH CARE NEEDS: school or special education program?]

[IF AGE ≥ 6 Years AND < 12 Years AND CHILD DOES HAVE SPECIAL HEALTH CARE NEEDS: school or special education program?]

[IF AGE ≥ 12 Years AND CHILD DOES HAVE SPECIAL HEALTH CARE NEEDS: school, special education program, or vocational education program?]

Yes..... 1
No 2 [SKIP TO MH20]

DON'T KNOW7 [SKIP TO MH20]
REFUSED9 [SKIP TO MH20]

MH19. Overall, are you very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied with that communication?

Very satisfied 1
Somewhat satisfied..... 2
Somewhat dissatisfied 3
Very dissatisfied..... 4

NO COMMUNICATION NEEDED OR WANTED....5
DON'T KNOW7

REFUSED.....9

MH20. When [CHILD] is seen by doctors or other health care providers, how often are they sensitive to your family's values and customs? Would you say...

Never, 1
Sometimes, 2
Usually, or 3
Always? 4

DON'T KNOW 7

REFUSED 9

MH21. How often has your child's race or ethnicity affected the quality of your child's health care?

Would you say...

Never, 1
Sometimes, 2
Usually, or 3
Always? 4

DON'T KNOW 7

REFUSED 9

Appendix B. Medical Home concepts, related survey items, and response criteria.

AAP Medical Home Concept	Survey Item	Response Required to Meet the Criteria
Established relationship with a provider	Do you have one or more persons you think of as your child's personal doctor or nurse?	Yes
Usual Source of Care - Continuity	<ol style="list-style-type: none"> 1. Is there a place your child usually goes when s/he is sick or you need advice about his/her health? <ol style="list-style-type: none"> a) If yes, what kind of place is it? 2. Is there a place your child usually goes when s/he needs routine preventive care, such as a physical examination or well child check-up? <ol style="list-style-type: none"> a) Is this the same place where you go when your child is sick? b) What kind of place is it? 	1 = Yes and a) = Source other than hospital emergency room AND 2 = Yes and either a) = Yes and usual source when sick = Yes or a) = No and b) = Source other than hospital emergency room
Family-Centered	During the past 12 months, how often did all child's health care providers: <ol style="list-style-type: none"> 1. Spend enough time with the child 2. Listened carefully to the parent 3. Helped parent feel like a partner in child's care 4. Provide needed information 5. Seem sensitive to your family's values and customs 	1 = Usually or Always AND 2 = Usually or Always AND 3 = Usually or Always AND 4 = Usually or Always AND 5 = Usually or Always
Comprehensive	<ol style="list-style-type: none"> 1. During the past 12 months, did your child need a referral to see any doctors or receive any services? <ol style="list-style-type: none"> a) If Yes to above, was getting a referral a big problem, a small problem, or not a problem? 	1 = Yes and a) = Not a problem OR 1 = No
Coordinated	<ol style="list-style-type: none"> 1. During the past 12 months, did you feel you could use extra help arranging or coordinating your child's care among different health care providers or services? <ol style="list-style-type: none"> a) If Yes to above, how often did you get as much help as you wanted with coordinating care? 2. Do your child's doctors or other health care providers need to communicate with child care entities? <ol style="list-style-type: none"> a) If Yes to above, how satisfied are you with that communication? 	1 = Yes AND a) = Usually or always OR 2 = Yes AND a) = Very satisfied

Appendix C: Complete Multivariable Logistic Regression Models

Table 1. Results of the Multivariable Logistic Regression predicting the Odds of Having a Medical Home (n=2,008^a)

	Odds Ratio	95% Confidence Interval
Child with Special Health Care Needs	0.72 *	0.54, 0.95
Male Child	0.83	0.66, 1.05
Age of Child (Reference: 13-17 years)		
0-5 years	1.23	0.89, 1.70
6-12 years	0.88	0.67, 1.15
Race of Child (Reference = White)		
African-American (non-Hispanic)	0.42 *	0.20, 0.92
Hispanic/Latino (all races)	0.81	0.50, 1.29
Other ^b	0.90	0.56, 1.45
Federal Poverty Level (Reference = 300%+)		
≤ 133%	0.99	0.63, 1.56
134% - 199%	1.11	0.76, 1.64
200% - 299%	1.11	0.82, 1.51
Insurance Status (Reference = Private)		
Uninsured	0.36 †	0.18, 0.68
Public	0.62 †	0.44, 0.87
Does not live in a Supportive Neighborhood	0.51 ‡	0.38, 0.70
Parental Age (Reference = 26-55 years)		
Under 25	0.53 *	0.28, 0.98
Over 55	1.40	0.71, 2.74
Parental Education (Reference = 4 or more years of college)		
High School or less	0.72	0.51, 1.02
Some College	0.89	0.68, 1.16
Aggravation in Parenting (Reference = Low)		
High	0.48 †	0.29, 0.80
Moderate	0.68 †	0.52, 0.90
Poor Parental Mental Health	0.65 †	0.46, 0.92

^a Does not match complete sample of 2,386 because of missing data on some items.

^b Includes Asians or Pacific Islanders, American Indians or Native Americans, and all other.

* p < 0.05 (significant)

† p < 0.01 (highly significant)

‡ p < 0.001 (very highly significant)

Table 2a. Results of the Multivariable Logistic Regression predicting the Odds of Having a Medical Home for the subset of CSHCN (n=429)

	Odds Ratio	95% Confidence Interval
Male Child	1.25	0.79, 1.98
Age of Child (Reference: 13-17 years)		
0-5 years	0.92	0.43, 1.96
6-12 years	0.67	0.41, 1.10
Race of Child (Reference = White)		
African-American (non-Hispanic)	0.21 *	0.05, 0.90
Hispanic/Latino (all races)	0.73	0.28, 1.94
Other ^a	0.78	0.34, 1.77
Federal Poverty Level (Reference = 300%+)		
≤ 133%	0.93	0.41, 2.11
134% - 199%	1.23	0.56, 2.67
200% - 299%	1.45	0.77, 2.75
Insurance Status (Reference = Private)		
Uninsured	0.54	0.12, 2.43
Public	0.90	0.47, 1.75
Does not live in a Supportive Neighborhood	0.53 *	0.30, 0.93
Parental Age (Reference = 26-55 years)		
Under 25	0.50	0.07, 3.45
Over 55	0.86	0.32, 2.36
Parental Education (Reference = 4 or more years of college)		
High School or less	1.32	0.64, 2.71
Some College	1.37	0.79, 2.36
Aggravation in Parenting (Reference = Low)		
High	0.19 ‡	0.08, 0.47
Moderate	0.38 *	0.18, 0.82
Poor Parental Mental Health	0.58	0.32, 1.04

^a Includes Asians or Pacific Islanders, American Indians or Native Americans, and all other.

* p < 0.05 (significant)

† p < 0.01 (highly significant)

‡ p < 0.001 (very highly significant)

Table 2b. Results of the Multivariable Logistic Regression predicting the Odds of Having a Medical Home for the subset of Children without SHCN (n=1,579)

Characteristic	Odds Ratio	95% Confidence Interval
Male Child	0.73 *	0.55, 0.95
Age of Child (Reference: 13-17 years)		
0-5 years	1.29	0.89, 1.86
6-12 years	0.95	0.69, 1.31
Race of Child (Reference = White)		
African-American (non-Hispanic)	0.55	0.21, 1.47
Hispanic/Latino (all races)	0.86	0.49, 1.49
Other ^a	0.97	0.54, 1.77
Federal Poverty Level (Reference = 300%+)		
≤ 133%	1.05	0.59, 1.84
134% - 199%	1.13	0.72, 1.78
200% - 299%	1.01	0.71, 1.43
Insurance Status (Reference = Private)		
Uninsured	0.30 †	0.15, 0.62
Public	0.53 †	0.35, 0.81
Does not live in a Supportive Neighborhood	0.50 ‡	0.34, 0.72
Parental Age (Reference = 26-55 years)		
Under 25	0.56	0.29, 1.09
Over 55	1.69	0.63, 4.55
Parental Education (Reference = 4 or more years of college)		
High School or less	0.57 †	0.38, 0.84
Some College	0.73	0.53, 1.01
Aggravation in Parenting (Reference = Low)		
High	1.14	0.42, 3.06
Moderate	0.74	0.55, 0.99
Poor Parental Mental Health	0.64 *	0.41, 0.98

^a Includes Asians or Pacific Islanders, American Indians or Native Americans, and all other.

* p < 0.05 (significant)

† p < 0.01 (highly significant)

‡ p < 0.001 (very highly significant)