PEDIATRICS®

Improved Outcomes Associated With Medical Home Implementation in Pediatric Primary Care

W. Carl Cooley, Jeanne W. McAllister, Kathleen Sherrieb and Karen Kuhlthau

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://www.pediatrics.org/cgi/content/full/124/1/358

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Improved Outcomes Associated With Medical Home Implementation in Pediatric Primary Care

WHAT'S KNOWN ON THIS SUBJECT: Specific attributes of a medical home improve the quality and efficiency of care, and there are demonstrated benefits in relation to some preventive care outcomes (immunizations) and with respect to specific conditions (asthma, low birth weight).

WHAT THIS STUDY ADDS: Increasing medical homeness across multiple attributes results in reduced hospitalization and emergency visits for children with several chronic conditions.

CONTRIBUTORS: W. Carl Cooley, MD,[a,b] Jeanne W. McAllister, BSN, MS, MHA,[a] Kathleen Sherrieb, DrPH, MS,[c,d] and Karen Kuhlthau, PhD[e,f]

[a]Center for Medical Home Improvement, Crotched Mountain Foundation, Greenfield, New Hampshire; Departments of [b]Pediatrics and [c]Psychiatry, Dartmouth Medical School, Hanover, New Hampshire; [d]Department of Veterans Affairs, National Center for Posttraumatic Stress Disorder, White River Junction, Vermont; [e]Center for Child and Adolescent Health Policy, Massachusetts General Hospital for Children, Boston, Massachusetts; [f]Department of Pediatrics, Harvard Medical School, Boston, Massachusetts

abstract

OBJECTIVE: The medical home model with its emphasis on planned care, care coordination, family-centered approaches, and quality provides an attractive concept construct for primary care redesign. Studies of medical home components have shown increased quality and reduced costs, but the medical home model as a whole has not been studied systematically. This study tested the hypothesis that increased medical homeness in primary care practice is associated with decreased utilization of health services and increased patient satisfaction.

METHODS: Forty-three primary care practices were identified through 7 health plans in 5 states. Using the Medical Home Index (MHI), each practice's implementation of medical home concepts "medical homeness" was measured. Health plans provided the previous year's utilization data for children with 6 chronic conditions. The plans identified 42 children in each practice with these chronic conditions and surveyed their families regarding satisfaction with care and burden of illness.

RESULTS: Higher MHI scores and higher subdomain scores for organizational capacity, care coordination, and chronic-condition management were associated with significantly fewer hospitalizations. Higher chronic-condition management scores were associated with lower emergency department use. Family survey data yielded no recognizable trends with respect to the medical home measurement.

CONCLUSIONS: Developing an evidence base for the value of the primary care medical home has importance for providers, payers, policy makers, and consumers. Reducing hospitalizations through enhanced primary care provides a potential case for new reimbursement strategies supporting medical home services such as care coordination. Larger-scale studies are needed to further develop/examine these relationships. *Pediatrics* 2009;124:358–364

Originating with the work of Calvin Sia and amplified in the 1990s by the American Academy of Pediatrics and the US Maternal and Child Health Bureau, the medical home model of primary care has been jointly endorsed by the American Academies of Pediatrics and Family Physicians, the American College of Physicians, the American Osteopathic Association, and the American Medical Association.[1–4] The American Academy of Pediatrics describes the medical home as a model of delivering primary care that is accessible, continuous, comprehensive, family centered, coordinated, compassionate, and culturally effective.[1] Although the focus of this study involves children with chronic conditions, the medical home model is now seen as applying not only to all children but to adults as well.

The evidence base supporting the medical home model remains formative and fragmentary.[5] Research has been hampered by the fact that there are few fully developed practice examples. Singular elements of a medical home such as care coordination and continuity of care have been studied. For children with asthma, decreased continuity of care has been found to increase hospitalization rates.[6] Another study found that comprehensive care for high-risk infants resulted in more outpatient visits, but fewer life-threatening illnesses, PICU admissions, and days in the PICU.[7] National survey data indicate that having a medical home is associated with increased ease of use of community services by families.[8] Homer et al[9] reviewed the evidence base for the medical home model and found that 28 of 33 articles meeting search criteria reported benefits of a medical home across a range of outcomes.

In this study, we hypothesized that having more aspects of a medical home would be associated with lower utilization of hospital and spe-cialty services. We also believed that parents of children with special health care needs would be more satisfied, report more coordinated care, function better, and perceive more support from higher level primary care medical homes.[10]

METHODS

The study identified primary care practices through the networks of 7 health plans. The "medical homeness" of each practice was measured by using the Medical Home Index (MHI).[11] The health plans provided emergency department, hospitalization, and primary and specialty care utilization data for a cohort of children affected by chronic conditions within each practice for the year before obtaining the MHI score. We studied utilization for 6 chronic conditions (asthma, diabetes, cerebral palsy, epilepsy, attention-deficit/hyperactivity disorder [ADHD], and autism) chosen for their relatively high prevalence and their diversity. A cohort of parents of children with these chronic conditions completed the family/caregiver survey developed by the Center for Medical Home Improvement. Study methods were reviewed and approved by the institutional review board of the Crotched Mountain Foundation.

Study Population

Health Plans

In an effort to provide a diverse, national sample, 7 health plans from 5 states and the District of Columbia were identified through their past participation in a Center for Health Care Strategies task force on health care for children with special health care needs and through personal contact with health plan medical directors. Six of the health plans were exclusively Medicaid and the seventh was a commercial plan.

Practices

Each health plan medical director was asked to identify up to 10 primary care practices to take part in the study. The practices were contacted and, if they agreed to participate, provided a packet including the MHI and instructions for its completion by a lead physician and at least 1 other office staff member.

Forty-three of the 60 identified practices completed the MHI for a response rate of 71.7%. The median number of practices in a given health plan was 7 with a range from 1 to 12. As noted in Table 1, the practices varied by geographic location, size, and ownership type. The participating primary care providers included family physicians, pediatricians, and nurse practitioners. The practices varied in the number of children with the targeted chronic conditions. All of the patients whose utilization or survey data were collected were on Medicaid except for those from the single private insurance plan.

Measures

Medical Home Index

MHI data were collected from February 2005 through June 2006. The MHI is a self-administered, quality improvement tool with 25 "themes" organized under 6 domains: (1) organizational capacity; (2) chronic-condition management; (3) care coordination; (4) community outreach; (5) data management; and (6) quality improvement. Each of the 25 items in the MHI is scored on a scale of 1 to 8, representing a continuum from basic pediatric care through comprehensive care. Mean item scores were calculated for the entire MHI and for the domains comprising the index. The overall MHI score was standardized on a scale of 1 to 100, with a higher score indicating better delivery of medical home services. Three of the authors (Dr Cooley, Ms McAllister, and Dr Sherrieb) con-

ducted 1-hour telephone interviews with the lead physician and 1 other office staff member to collect the practices' scores.

Family Survey

The family/caregiver survey developed by the authors includes 26 questions about the child, the family, and the primary care practice. The survey includes questions regarding demographic information, the usual source of care, experiences with planned and coordinated care, and levels of satisfaction related to practice access, coordination, and communication. Family burden of care, parental lost days of work, and lost employment opportunity are also addressed.

Family surveys were initiated by the health plan after completion of the primary care MHI interview. Random samples of practice families within a health plan were stratified according to diagnosis (ADHD, asthma, autism, cerebral palsy, diabetes, and epilepsy), and 42 families per practice were targeted for survey mailing. The number 42 was chosen somewhat arbitrarily to increase the likelihood of a return of at least 30 surveys per prac-

tice. We surveyed equal numbers of families with each diagnosis to broaden the distribution by diagnosis. Surveys were provided in both English and Spanish. Families were offered a gift card of $15.00 for completing the survey. To protect the privacy of plan members, survey mailings were managed by the plans with completely unidentified surveys returned to the study project office.

Not all practices had enough children to meet the minimum requirement of 7 children per diagnosis. In those cases, children were randomly assigned from the remaining eligible children to survey 42 families from each practice. Nine practices had fewer than 42 children eligible to receive the family survey. Two health plans combined the patient populations for 2 practices, resulting in family survey data linked to 2 practices rather than 1. Because the MHI scores of the practice pairs were similar, 1 practice was randomly chosen to be compared with family surveys, reducing the available practices for analysis of family survey data to 41.

Utilization Review

When the MHI data were collected from all of the practices, the health plan extracted the previous year's utilization data for the 6 conditions among all of the plan members using each practice. Each plan selected children with ≥1 of the 6 conditions as identified by having at least 1 claim in the past year with a relevant International Classification of Diseases, Ninth Revision code. We included in the analyses only children with a full year of enrollment. We requested all inpatient, emergency department, and specialty and primary care encounters, and the diagnoses associated with these visits.

Because of the small number of practices, the clinical variability of the conditions, and the variability in expected

utilization by condition, our comparison of MHI scores to utilization data followed a condition-by-practice approach to increase the number of cases. We computed a practice rate of emergency department visits, hospitalizations, and the ratio of primary care visits to specialty visits for each of the 6 conditions assessed in a given practice. Asthma was the only condition seen in all practices. Utilization rates were used only if there was at least 1 child in a practice with the condition; thus, of a possible 258 conditions-by-practice cases (43 practices times 6 chronic conditions), there were 178 condition-practice cases eligible for analysis. One extreme outlier with 267 specialty visits, believed to reflect a coding error, was removed for the analyses of the ratio of primary care to specialty care visits. Outcomes included the rates for emergency department visits and hospitalizations and the ratio of primary care to specialty care visits.

Analyses

Family Survey Analysis

Descriptive analyses were reviewed for all returned surveys, and data were recoded to facilitate directionality of responses. Factor analysis was completed with the 29 survey items, and factor scores were calculated as summary scores with the included items. These scores were then standardized. The mean of each factor score was determined for all family surveys in a given practice. We used the mean practice score to describe family responses and determine condition-by-practice scores for use in the descriptive and comparative analyses of family survey and MHI data.

Utilization Analyses

Descriptive analyses were reviewed for all children with utilization data. Utilization was then calculated for

condition-by-practice and bivariate correlations were examined. Three separate regression models were tested with the 3 utilization categories as the dependent variables. Individual models were tested with the overall MHI score and with each domain mean score. Child conditions were included in the models as covariates. Because geography and the health insurance plan were not statistically significant covariates in initial analyses, we did not include them in the multivariate models.

RESULTS

Descriptive Statistics

Table 1 provides a description of the 43 practices by size, geographic location, and ownership type. Practices were not statistically different for MHI scores or for utilization by plan (Medicaid or private insurance), geography, size of practice, or type of ownership.

Table 2 presents the descriptive information for each of the 3 separate samples of data collected for the study before transforming the data to the condition-by-practice unit. As noted in the MHI section of Table 2, the MHI scores of the 43 practices, standard-ized on a scale from 1 through 100, had a mean score of 41.6 and a range of 16.7 to 79.4. Higher scores indicate a greater level of medical homeness in the practice. Mean and median scores were similar, and MHI results generally showed a normal distribution.

The family survey section of Table 2 reports the descriptive statistics for the 448 returned family surveys. Returned between August 2005 and December 2006 with a response rate of 32.8%, the respondents represented 38 of the 43 practices. There were, on average, 11.8 surveys returned per practice. There were 59.8% male children represented by the respondent families with a mean age was 9.7 years. Asthma (43.8%) was the most common diagnosis, followed by ADHD (24.3%). Autism was reported by 6.5%, epilepsy by 5.1%, cerebral palsy by 3.6%, and diabetes by 2.9% of respondents. Other diagnoses were reported by 11.6% of the families, and 2.2% reported no diagnosis. Factor analyses identified 4 distinct factors in the family survey: care coordination, family function, family satisfaction, and practice support to the family. Composite summary scores of the fac-tor survey questions were calculated and standardized on a scale of 1 to 100 for comparison. Mean and median scores were similar. Family function had the lowest mean score (38.2). Care coordination, with a mean of 48.6, had a multimodal distribution, with a first cluster of families experiencing very low care coordination scores,[8–13] a second cluster scoring in the midrange of 60s, and a third cluster scoring in the high range of 95 or greater. The mean scores for family satisfaction with services and family perception of support from the practice were high. There was considerable variability of scores across families.

The utilization rates section of Table 2 presents the utilization data at the individual patient level reported for the 5442 children eligible for review in the study. On average, utilization data were provided for 880 children per health plan. The children in the utilization data review ranged in age from 1 to 19 years; the mean age was 9.0 years. The majority of children in the review were male (63.8%). Asthma was the most common diagnosis (59.3%) followed by ADHD (31.6%). Fewer than 6% of the children in the utilization review had each of the remaining diagnoses. As noted in the Table, emergency department visits and hospitalizations occurred infrequently. Because more than half of the patients had no hospitalizations and no emergency department visits, the medians for these were 0. Ambulatory visits at the individual patient level were not subdivided into primary and specialty care. Less than 1% of the patients had >100 visits, so these were excluded as outliers. The distribution was still skewed resulting in the gap between the mean (13.4 visits per year) and the median (6 visits per year).

Table 3 presents descriptions of the transformed condition-by-practice utilization-dependent variables. The

TABLE 2 Descriptive Statistics

Measurement	Mean (SD)	Median	Minimum	Maximum
MHI (n = 43 practices)[a]				
MHI standard summary score	41.6 (12.69)	39.9	16.7	79.4
Domain score				
Organizational capacity	4.1 (.99)	4.0	2.3	6.3
Chronic condition management	4.0 (1.06)	3.7	2.0	6.7
Care coordination	3.9 (1.06)	3.7	2.0	6.3
Community outreach	3.5 (1.41)	3.0	1.5	7.5
Data management	4.1 (1.46)	4.0	1.0	8.0
Quality improvement	3.2 (1.47)	3.0	1.0	7.0
Family survey score (n = 448 families)[b]				
Care coordination	48.6 (29.59)	47.8	4.3	100.0
Family function	38.2 (19.61)	36.0	2.0	96.0
Family satisfaction	76.0 (21.08)	79.3	17.2	100.0
Practice support to families	62.1 (21.53)	60.0	20.0	100.0
Utilization rates (individual patients) (n = 5442 children)[c]				
Emergency department visits per year	0.56	0	0	24
Hospitalizations per year	0.15	0	0	17
Total ambulatory visits per year (excluding outliers >100 visits)	13.40	6	0	100

[a] Collected between February 2005 and March 2006.
[b] Returned between August 2005 and December 2006.
[c] Occurring between March 2004 and July 2005 (the year before the MHI score).

TABLE 3 Condition-by-Practice Utilization Rates ($N = 178$)

Utilization	Mean (SD)	Median	Minimum	Maximum
Emergency department rates	0.96 (2.38)	0.17	0	17.5
Hospitalization rates	0.16 (0.47)	0	0	3.6
Ratio of primary to specialty visits ($n = 177$)	2.1 (5.6)	0.2	0	58

TABLE 4 Correlations of Overall MHI Score and Domain Scores With Utilization Rates

Medical Home Measure	Overall Rate of Emergency Department Visits	Overall Hospitalization Rate	Overall Ratio Primary Care to Specialty Care
MHI overall standard score	−0.05	−0.16[a]	−0.07
Organizational capacity	−0.06	−0.18[a]	−0.04
Chronic condition management	−0.12	−0.16[a]	−0.05
Care coordination	−0.09	−0.16[a]	−0.01
Community outreach	0.13	0.02	−0.09
Data management	0.03	−0.10	−0.13
Quality improvement	0.06	−0.04	−0.09
N	178	178	177

[a] $P < .05$.

TABLE 5 Regression Coefficients for MHI Components and Utilization Variables

	Emergency Department Visit Rate	Hospital Rate	Primary Care to Specialty
MHI overall score	−0.092	−0.189[a]	−0.065
Organizational capacity	−0.094	−0.201[a]	−0.038
Chronic condition management	−0.160[b]	−0.191[a]	−0.044
Care coordination	−0.115	−0.168[b]	−0.023
Community outreach	0.094	0.004	−0.086
Data management	−0.019	−0.137	−0.124
Quality improvement	0.033	−0.062	−0.084
N	178	178	177

[a] $P < .01$.
[b] $P < .05$.

mean emergency department visit rate across conditions by practice was 0.96; that is, for each condition at a practice, there was approximately an average of 1 emergency department visit per year. The hospitalization conditions by practice mean rate was 0.16, and the mean ratio of primary care visits to specialty visits was 2.1.

Bivariate Analyses (Correlations) and Multivariate Analyses

No significant relationships were found in the correlations of the 4 family survey components with the MHI summary score and domain mean scores.

Bivariate correlations were calculated for the 3 utilization variables with the MHI summary score and the mean domain scores. Table 4 presents the correlation results using the condition by practice units. Hospitalization rates were significantly negatively correlated with the overall MHI score as well as with the mean domain scores for organizational capacity, chronic-condition management, and care coordination. No significant correlations were found between the MHI components and emergency department visit rates or primary care to specialty care ratios on bivariate analysis.

Multivariate analyses were conducted to examine the relationships between the MHI components and utilization while controlling for the chronic conditions. Standardized regression coefficients are reported in Table 5. When controlling for chronic condition, MHI total score and mean scores for the domains of organizational capacity, chronic-condition management, care coordination, and data management were significantly and negatively associated with hospitalization rates. Emergency department visit rates significantly decreased with an increase in the mean score for the chronic-condition management and care coordination domains on the MHI.

DISCUSSION

This study provides an initial examination of correlations between medical home implementation and outcomes that affect cost and quality. Within the limitations described below, the results suggest that strong primary care medical homes are less likely to hospitalize children with common chronic conditions and that strong chronic-condition management and care coordination reduce both hospitalizations and emergency department visits. Although modest and influenced by the 2 most prevalent conditions (asthma and ADHD), the results of this study point to important implications for the development of enhanced and hybrid reimbursement scenarios to support practices implementing the medical home model.

There is a need for larger studies of similar design that might be more easily undertaken within a single large payer organization or through collaborative multipayer initiatives. The systematic measurement of medical home status among large numbers of primary care practices with a standardized tool like the MHI or the National Committee on Quality Assurance

Physician Practice Connection–Patient-Centered Medical Home measure provides new opportunities to examine a variety of outcomes.[11,12] Larger studies could stratify chronic illness according to severity and comorbidities, consider clinical and functional outcomes, and assign cost savings to specific changes in MHI scores or to specific MHI domains. Types of practice and practitioners could also be analyzed along with an examination of provider and staff satisfaction variables. Pilots for new and creative incentives to primary care practices attempting to improve medical home services are being launched by several large national health plans, state Medicaid programs, and Medicare.[13]

The results obtained from the family surveys failed to demonstrate significant correlations between the perspectives of families of children with chronic conditions and the medical home status of their primary care providers. The low overall survey response rate and the variability in the number of responses per practice might have affected these findings. However, if there is truly a poor correlation between family perceptions of care and medical home implementation, these preliminary findings are important and warrant additional investigation into the determinants of patient and family satisfaction.

Because the health plans and, in turn, the individual primary care offices participated in this study voluntarily, selection bias may have affected the results. However, the distribution of MHI scores was broad enough and similar enough to previous results that a range of medical home characteristics seems well-represented.[11] Only 3 primary care practices had taken part in any previous quality improvement effort focused on the medical home model, and the authors are unaware of

any major practice changes implemented by any practices during the year in which utilization data were collected. Practices with high MHI scores might have more patients with lower utilization patterns for reasons unrelated to MHI scores; however, our experience has been that such practices tend to attract more complex, potentially high-using patients. We did not have data regarding duration of enrollment in the individual practices, so that population mobility with respect to primary care provider (as opposed to plan) might have influenced our results. The use of billing data to determine utilization has limitations in that coding of conditions and procedures tends to favor reimbursement, but any biases in this regard are likely to have affected strong and weaker medical home practices similarly.

The number of practices eventually analyzed in this study (43) was well below the initial goal of 60. This resulted from difficulties with plan recruitment and the plans' subsequent difficulties identifying and recruiting practices. We were able to partially compensate for this by using the condition-by-practice approach to data analysis, but a larger cohort of practices might have produced stronger results.

By using a condition-by-practice approach for 6 chronic conditions, we cannot generalize beyond the studied conditions. We did not have observations for each condition in each practice, which limited our sample somewhat. In addition, this approach estimates the impact of MHI scores across condition groups. Although the medical home approach is intended to be a practice-wide change, it may have a greater impact for children with certain conditions.

The available data and resources for this study did not allow us to stratify conditions according to severity or to measure the impact of comorbidities.

Although, MHI scores showed no variability with the practice descriptors we collected, we were not able to provide detailed stratification according to practice type or percentage of Medicaid enrollment. Finally, reflecting the known epidemiology of chronic conditions, asthma and ADHD predominated in this sample, which limited the contribution of the other conditions to the findings.

CONCLUSIONS

Physicians, families, payers, purchasers, and policy makers recognize the importance of high-quality primary care for effective improvement of our health system.[14–18] A better planned and family-centered approach to care that identifies the primary care medical home as the headquarters and locus of comprehensive, longitudinal care and care coordination has wide support.[19,20] Everyone providing, using, or paying for health care has concerns about quality in the face of rising health care costs.

As the value of a high-quality, primary care medical home becomes more clearly supported by good evidence and appropriate incentives, the provision of technical assistance to practices through quality improvement organizations, practice networks, professional organizations, and payers will be needed to hasten more widespread implementation of improved models of care.[21]

REFERENCES

1. American Academy of Pediatrics, Medical Home Initiatives for Children With Special Needs Project Advisory Committee. Policy statement: organizational principles to guide and define the child health care system and/or improve the health of all children. *Pediatrics.* 2004;113(suppl 5): 1545–1547

2. Sia C, Tonniges TF, Osterhus E, Taba S. History of the medical home concept. *Pediatrics.* 2004; 113(suppl 5):1473–1478

3. Strickland B, McPherson M, Weissman G, van Dyck P, Huang ZJ, Newacheck P. Access to the medical home: results of the National Survey of Children With Special Health Care Needs. *Pediatrics.* 2004;113(suppl 5):1485–1492

4. American Academy of Family Physicians; American Academy of Pediatrics; American College of Physicians; American Osteopathic Association. Joint principles of the patient-centered medical home, February 2007. Available at: www.pcpcc.net/content/joint-principles-patient-centered-medical-home. Accessed May 10, 2009

5. Cooley WC. Redefining primary pediatric care for children with special health care needs: the primary care medical home. *Curr Opin Pediatr.* 2004;16(6):689–692

6. Christakis D, Mell L, Koepsell TD, Zimmerman FJ, Connell RA. Association of lower continuity of care with greater risk of emergency department use and hospitalization in children. *Pediatrics.* 2001; 107(3):524–529

7. Broyles RS, Tyson JEH, Heyne ET, et al. Comprehensive follow-up care and life-threatening illnesses among high-risk infants: a randomized controlled trial. *JAMA.* 2000;284(16):2070–2076

8. Baruffi G, Miyashiro L, Prince CB, Heu P. Factors associated with ease of using community-based systems of care for CSHCN in Hawaii. *Matern Child Health J.* 2005;9(suppl 2):S99–S108

9. 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). Available at: www.pediatrics.org/cgi/content/full/122/4/e922

10. McAllister JW, Cooley WC, Sherreib KA. Medical home improvements enhance outcomes for children and youth with special health care needs. Poster presented at: National Institute for Children's Healthcare Quality National Forum. March 20, 2007; Orlando, FL

11. Cooley WC, McAllister JW, Sherrieb KA, Clark RE. The Medical Home Index: development and validation of a new practice-level measure of implementation of the medical home model. *Ambul Pediatr.* 2003;3(4):173–180

12. National Committee on Quality Assurance. *Physician Practice Connection: Patient-Centered Medical Home.* Washington, DC: National Committee on Quality Assurance; 2008. Available at: www.ncqa.org. Accessed May 10, 2009

13. Medicare Payment Advisory Commission. *Report to Congress: Reforming the Delivery System.* Washington, DC: Medicare Payment Advisory Commission; 2008

14. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q.* 2005;83(3):457–502

15. Grumbach K, Bodenheimer T. A primary care home for Americans: putting the house in order. *JAMA.* 2002;288(7):889–893

16. Commonwealth Fund Commission on a High Performance Health System. *Framework for a High Performance Health System for the United States.* New York, NY: Commonwealth Fund; 2006

17. Forrest CB. Strengthening primary care to bolster the health care safety net. *JAMA.* 2006;295(9): 1062–1064

18. Robeznieks A. Of primary importance: primary-care physicians seek to legitimize the "medical home" concept to improve quality, costs—but will insurers buy it? *Mod Healthc.* 2007;37(45):6–7, 1

19. Doherty RB. Can the "medical home" model solve health care's woes? American College of Physicians: Observer; 2005. Available at: www.acponline.org/journals/news/nov05/washington.htm. Accessed May 10, 2009

20. Martin JC, Avant RF, Bowman MA, et al; Future of Family Medicine Project Leadership Committee. The Future of Family Medicine: a collaborative project of the family medicine community. *Ann Fam Med.* 2004;2(suppl 1):S3–S32

21. Cooley WC, McAllister JW. Building medical homes: improvement strategies in primary care for children with special health care needs. *Pediatrics.* 2004;113(suppl 5):1499–1506

Improved Outcomes Associated With Medical Home Implementation in Pediatric Primary Care

W. Carl Cooley, Jeanne W. McAllister, Kathleen Sherrieb and Karen Kuhlthau

Updated Information & Services	including high-resolution figures, can be found at: http://www.pediatrics.org/cgi/content/full/124/1/358
References	This article cites 14 articles, 9 of which you can access for free at: http://www.pediatrics.org/cgi/content/full/124/1/358#BIBL
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): **Office Practice** http://www.pediatrics.org/cgi/collection/office_practice
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.pediatrics.org/misc/Permissions.shtml
Reprints	Information about ordering reprints can be found online: http://www.pediatrics.org/misc/reprints.shtml

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™