

MEDICAL HOME:

Model of Continuous,
Coordinated Care for Connecticut's Children



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About the Child Health and Development Institute of Connecticut:

The Child Health and Development Institute of Connecticut (CHDI) is a not-for-profit organization established to promote and maximize the healthy physical, behavioral, emotional, cognitive and social development of children throughout Connecticut. CHDI works to ensure that children in Connecticut who are disadvantaged will have access to and make use of a comprehensive, effective, community-based health and mental health care system.

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INTRODUCTION

MEDICAL HOME is a model for health care delivery that ensures that families and children receive accessible, continuous, coordinated, comprehensive, family-centered and culturally competent services.

MEDICAL HOME is a model for health care delivery that ensures that families and children receive accessible, continuous, coordinated, comprehensive, family-centered and culturally competent services.¹ The term was developed by the American Academy of Pediatrics (AAP) and was formerly applied to the care of children identified as children and youth with special health care needs (CYSHCN).² These children are eligible for services under a federal block grant program awarded to each state to provide health and support services to children who have highly complex needs and who require a broad array of services, from primary care to medical subspecialty care, and who may also need medical equipment and family respite services.

Recently the federal Bureau of Maternal and Child Health, which administers the block grant program, broadened the definition of CYSHCN to include “those who have or are at increased risk for a chronic physical, developmental, behavioral or emotional condition and require health and related services beyond that required for children in general.”³ The concept of medical home, too, has been broadened to describe **the optimal health care delivery approach for all children and a model for practice improvement.**⁴ The Healthy People 2010 target for the percentage of children and youth with a usual source of medical care, a central feature of medical home, is 97%.⁵



HELP TO COUNT ON
MEDICAL HOME CONCEPT TIES TOGETHER RESOURCES FOR CHILDREN IN NEED

By Elizabeth Cooney, WORCESTER TELEGRAM & GAZETTE STAFF ecooney@telegram.com

STERLING—Cathy Polewarczyk paused before listing her daughter’s specialists.

Amy, who turns 7 today, is a child with Down syndrome, a constellation of physical and developmental challenges. She no longer needs a cardiologist, her mother was recalling, but she does receive care from a dozen other skilled professionals to keep her healthy and help her to learn. Amy regularly sees an audiologist, an ear, nose and throat specialist, an endocrinologist, a pulmonologist, a physiatrist, a urologist, a developmental specialist and a pediatrician. She attends school in Sterling, spending the morning in a developmental class with a special education teacher and the afternoon in kindergarten with an aide. She also receives occupational and physical therapy there.

A lively girl who recently has begun asserting her independence at home by pulling food from the refrigerator, Amy requires constant supervision, her mother said.

So does her health and education.

“It’s a full-time job,” said Mrs. Polewarczyk, who resigned from her career as a preschool special education teacher when Amy was born. “It’s a lot to keep track of.”

Coordinating care for a child with special health-care needs can be overwhelming, even for someone as expert as Mrs. Polewarczyk. Helping families find what they need for their children is the heart and soul of a movement promoting what is called “medical home.” The concept sounds simple — having one place, usually the child’s primary care doctor’s office, where comprehensive, compassionate care can be coordinated through a partnership with the family and collaboration with community-based organizations.

But the execution can be daunting when specialists in medicine, mental health or education operate in isolation.

“It’s hard enough for families to be able to raise a child with special needs on their own anyway, but then to have to deal with being the captain of their own ship and basically know who to contact and when; how to tie everything together is absolutely overwhelming,” said Dr. Richard C. Antonelli, assistant professor of pediatrics at University of Massachusetts Medical School in Worcester and a nationally known advocate of medical home. “We’re creating linkages between the families, the primary care physician and subspecialty care resources and out to the community.”

To colleagues already straining to see more patients in less time, Dr. Antonelli says that if he is doing a good job as a medical home provider for some of the most medically complicated children he sees, they are the ones he hears from the least. That’s because the family has support systems in place, either from other families or community resources that help them care for their child.

“It’s the medical home’s responsibility to provide them with the training and resources to be able to take care of themselves,” he said. “It’s not a dependency model; it’s a model that encourages independence through a collaborative linkage.”

This report reviews the components of medical home, with a discussion of what is known about how each component contributes to the quality and efficiency of the health care system and to improved outcomes for children and families. It also outlines the barriers to implementing the medical home approach in primary care, where almost 90% of children 18 and younger receive health services. Following a discussion of medical home initiatives in Connecticut, the report concludes with recommendations for statewide action to expand the availability of and improve the quality of primary care, so that all children in Connecticut will have a medical home.

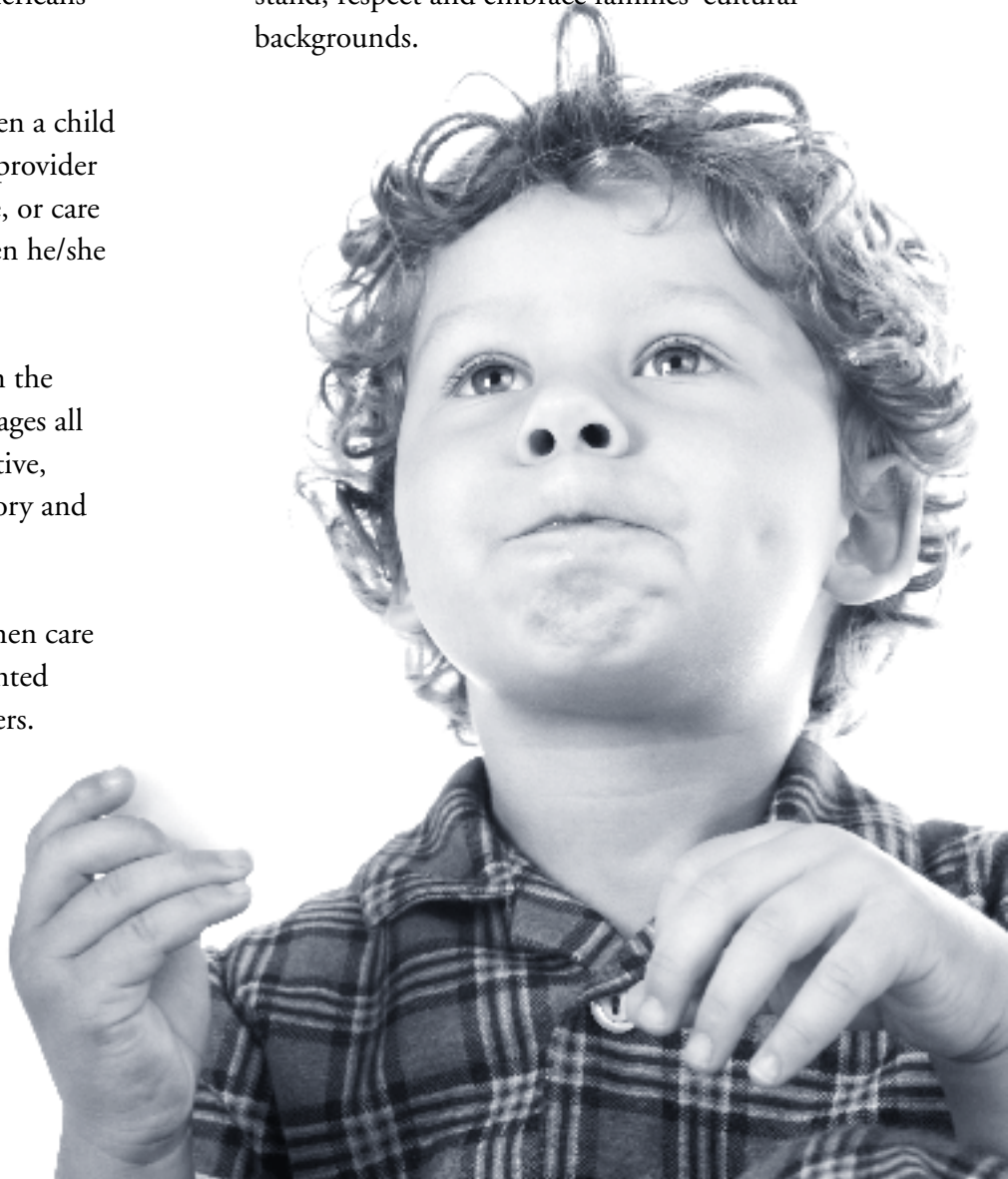


MEDICAL HOME CHARACTERISTICS

AAP has defined medical home as health care that is: accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective.¹

- **Accessible care** is defined by practice location, ease of obtaining an appointment or communication with a health care provider, affordability of care, and accommodations ensuring compliance with the Americans with Disabilities Act.
- **Continuity of care** is realized when a child has the same primary health care provider from infancy through adolescence, or care information follows the child when he/she changes providers.
- **Comprehensive care** results when the primary health care provider manages all of a child's care, including preventive, acute, chronic, specialty, ambulatory and inpatient hospital services.
- **Family-centered care** happens when care plans are developed and implemented in partnership with family members.

- **Coordinated care** ensures that children are linked to all the services they need both within and beyond the health care system. The medical home connects children to services and then monitors utilization and progress to update care plans.
- **Compassionate and culturally effective care** requires health care providers to understand, respect and embrace families' cultural backgrounds.



FACTORS IN MEDICAL HOME EFFECTIVENESS

The evidence supporting the effectiveness of the medical home components is compelling. Ideally, the implementation of the medical home approach to care will provide preventive and acute care services, and will ensure early identification of health, developmental, and socio-emotional concerns and appropriate referral for other services. As a result, medical home should increase immunizations, reduce the risks of emergency department visits and hospitalizations, and decrease the duplication of services that can occur when medical records are not centrally located and care is not coordinated. Medical home should also increase patient and family satisfaction, particularly from the parents of children who have complex and chronic health care needs.⁷ Efficient clinical practice that benefits families, as well as providers and their practice staff, should result as practices move toward the ideal form of medical home. Accessibility, continuity, comprehensiveness, family-centeredness, coordination, compassion, and cultural effectiveness all contribute to the overall provision of quality health services.

Accessible
Starfield and colleagues⁸ have made the case that access to a regular source of primary care is functionally equivalent to the medical home, and that such access is widely associated with superior health outcomes. Other data directly evaluating access are limited, but

suggest that some groups have less access and more unmet needs than others. Children with special health care needs who receive care in medical homes report timelier care, fewer instances of forgone care, fewer unmet health care needs, and fewer unmet needs for family support services.⁹ Among CYSHCN, however, African-American children, children whose mothers have less than a high school education, children whose families are below or near the federal poverty level, and uninsured children are more likely to have unmet needs for routine care.¹⁰ Among all children — not just those with special health care needs — the uninsured are at greater risk for inadequate access to primary care. Even those insured by Medicaid, many of whom are assumed to have access to primary care,¹¹ do not receive recommended well-child visits. This problem has been documented nationally,¹² in Connecticut,¹³ and in other states.¹⁴

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Continuous

Continuity of care studies in children are limited. Christakis¹⁵ conducted a retrospective cohort study, using claims data from 46,097 pediatric patients enrolled at Group Health Cooperative, a large staff-model health maintenance organization. The study assessed the association between a continuous relationship with a primary care provider and decreased risk of emergency department (ED) visits and hospitalization. The study analyzed data for a five-year period for patients who made at least four visits to one of the cooperative's clinics, and had been enrolled for at least two years. Results indicated that decreased continuity of care significantly increased risks of hospitalization and ED use.¹⁶ Continuity of care has also been associated with a reduction in the number of hospitalizations and ED visits for both adults and children.¹⁷

Comprehensive

Evidence suggests that comprehensive care, too, is associated with both improved health and lowered costs. Broyles¹⁸ compared comprehensive and routine care for high-risk, inner-city infants. Comprehensive care included acute and routine services provided five days a week with 24-hour access during those days to primary care providers. Coordination with emergency departments and transportation assistance were also part of this model. In

contrast, standard care was available only two mornings a week and included maternal education about recognizing acute illness and how to access acute care services. Compared to standard care, comprehensive care resulted in a greater number of overall visits to the doctor's office, but also showed a reduction in life-threatening illnesses, intensive care admissions, and intensive care days. "For all care between nursery discharge and one year, the estimated mean cost per infant was \$6,265 for comprehensive care and \$9,913 for routine care."¹⁹ Providing comprehensive care proved less expensive even though children in this group used more services, because the services used were less costly. Liptak et. al.²⁰ have also shown that availability of comprehensive care is effective in reducing the mean length of hospital stays and annual hospital admissions.

Coordinated

Care coordination, or the linking of children to services outside the medical home, has been shown to be cost-effective and to result in improved health outcomes. After investing \$400 per child over one year to ensure care coordination in a medical home, Palfrey and colleagues²¹ found a significant decrease in the number of parents of CYSHCN missing more than 20 days of work and a significant decrease in children's hospitalization rates. Parents reported that when a nurse practitioner was acting as a care coordinator, it was easier

to set goals for their children (52% responded "easier"), get letters of medical necessity (67% responded "easier"), and to have the same nurse with whom to talk (68% responded "easier"). Antonelli²² found that 26% of care coordination encounters saved families unnecessary office visits.

Despite the proven effectiveness of care coordination services, their provision in pediatric practices is still less than optimal. Gupta²³ surveyed 1,632 AAP members (57% responding) and found that 71% of pediatricians responding reported that they or someone in their practice coordinates care for patients. When asked about specific care coordination tasks, however, only 23% reported always contacting schools about a child's health, only 19% scheduled time with the child's family to discuss the results of a visit to a specialist, and only 24% reported meeting with a discharge planning team if a child were hospitalized.

Family-centered

Evidence shows that pediatric practice has only barely begun to address family-centered care. In an analysis of data from *The National Survey of Children with Special Health Care Needs (CSHCN)*, Strickland⁹ reported that only 67% of parents of CYSHCN reported that they had received all elements of family-centered care, including opportunities to share in decision-making about their children's

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care. Parents of children living in poverty, those older than 11 years, Black, Hispanic, and non-Hispanic children of other racial/ethnic backgrounds were even less likely to report receiving family-centered care. Another analysis of the same data set found that parents who report lower levels of family-centered care also report lack of ease in using services.²⁴

Compassionate and culturally effective

Similarly, little evidence exists on the extent to which specific outcomes are related to the provision of compassionate, culturally effective care in a medical home. An analysis of *The National Survey of Children with Special Health Care Needs* showed that parent-reported ease of using services increased with perceived provider sensitivity to family values and customs.²⁵ The Institute of Medicine's recent report, *Unequal Treatment: Confronting racial and ethnic disparities in healthcare*,²⁶ emphasizes that lack of culturally effective care is a major contributor to health disparities for children and adults in the United States.

Comprehensive medical home evidence

One recent comprehensive state level evaluation of medical home provides evidence that the medical home approach is cost-effective and results in improved outcomes. The Pediatric Alliance for Coordinated Care in Boston conducted a feasibility study of a medical home model for children with special health care needs in six community-based pediatric

practices (four private practices and two neighborhood health centers).²¹ Approximately 40 children per practice were selected for participation based on medical, developmental, or emotional needs. The model for each home included a pediatric nurse practitioner who operated as a case manager (care coordinator), a parent consultant (funded by the study), individualized health plans, and continuing medical education for health care professionals at all levels. Outcomes included parental satisfaction, hospital, and emergency department utilization and effect on parental workdays lost compared to pre-intervention.

Most families reported improvements in a range of services following the intervention. They reported that access to coordinated and comprehensive care was much easier or somewhat easier under the intervention, including: having the same nurse to talk to (68%), getting their calls returned (61%), getting an appointment (61%), and getting resources for my child (60%). Areas where families reported less improvement were: getting respite care (23%) and getting transportation (16%). The results also show the potential for overall lower costs, as children in the study “were hospitalized fewer times and parents missed fewer days of work than before the institution of the program.” (P.1514) There were no reported changes with regard to emergency department utilization or missed school days.

Just about all of the components of the medical home have been shown to provide some benefit for children, families, providers, and the health care system. Interest in full-scale implementation of this model is warranted given the promising evidence and general public interest in improving health services and outcomes for children as a prerequisite to ensuring school readiness and overall growth and development. The following section reviews the barriers to implementing medical home as a health care practice improvement model.

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BARRIERS TO IMPLEMENTING MEDICAL HOME

One of the most significant challenges to implementing medical home is that pediatric health care services are generally not being built de novo, but require providers, staff, and patients to make substantial changes in their daily practices. As noted by one pediatrician, Carl Cooley, who directs the national Center for Medical Home Improvement, "Introducing change into a busy primary care pediatrics practice is like trying to repair a bicycle while riding it."²⁷ Cooley identified three additional critical obstacles to implementation of medical home: 1) lack of office-based data or registry systems that support systematic approaches to the patient population; 2) roles that are not explicitly defined among parents, primary care health professionals and others; and 3) reimbursement systems that are inadequate for many services, such as comprehensive, coordinated care.²⁸

This final obstacle, inadequate reimbursement, has received much attention. Two populations of children are deemed at risk for underutilization of health services due to health insurance status: children who are uninsured and children for whom Medicaid is the source of health insurance. Uninsured children are less likely to have a usual source of care and more likely to report unmet health care needs, delayed care and/or the lack of medical care because of cost.¹¹ When low-income CYSHCN lack insurance, they face greater problems with access to health care than other children.²⁹

The recently released Robert Wood Johnson report, *Going Without: America's Uninsured Children*,³⁰ highlights the scope of the problem. The report estimates that the two-year average (2002-2003) of uninsured children nationally was 8.4 million or about 12% of all children, with 71,123 for the same time period in Connecticut (8.2% of the children in Connecticut).

Among the uninsured nationally, one in three went without any care for the entire year. In Connecticut, about one in four uninsured children went without any care for the entire year, compared to one in ten for insured children. The report estimates that 70% of the uninsured children are eligible for Medicaid or other state child health insurance plans but are not enrolled for a variety of reasons. Furthermore, the uninsured tend to have health care needs met in multiple clinics and/or emergency departments with little continuity of care. This fact makes tracking utilization and ongoing needs extremely difficult, and increases duplication of services.

Children with health insurance and particularly those insured by Medicaid, still experience barriers to access. When attempting to meet their children's health care needs, families with CYSHCN experience greater burdens, including out-of-pocket expenditures, than other families; this is the case regardless of health insurance coverage.^{29,31} Davidoff, in analyzing

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data from the 2000 and 2001 *National Health Interview Surveys*, reported that children with special health care needs are more likely to be insured compared to other children,²⁹ yet more than twice as many (20%) of low-income CYSHCN still experience some unmet need, compared with other low-income children (9.1%), and higher income CYSHCN (9.9%).

In 1997, the federal State Children's Health Insurance Program (SCHIP) began giving grants to states to provide health insurance coverage to uninsured children up to 200% of the federal poverty level. Connecticut designed the Healthcare for Uninsured Kids and Youth (HUSKY) program to participate in the federal SCHIP initiative. The majority of children receiving benefits do so through HUSKY A which, as a Medicaid program, is an entitlement program. HUSKY B provides low-cost health insurance to uninsured children ineligible for HUSKY A because of income guidelines.³²

Despite the overall increase in the number of children nationally and in Connecticut who have health insurance, many families still face barriers in accessing health services, even when their children do not have special health care needs. Providers' unwillingness to accept patients insured by the Medicaid program is thought to be one access barrier.

An AAP member survey in 2000, however, showed that more than 65% of pediatricians nationally reported that they accept all patients covered by Medicaid who contact them for care.³³ This number was up from 48% prior to SCHIP implementation. Responding pediatricians cited low reimbursement rates and excessive paperwork as two important factors that limit their participation in Medicaid and SCHIP. Ninety percent of Connecticut pediatrician respondents said that they participate in Medicaid/SCHIP, but 49% responded that they limit their participation due to low reimbursement rates.³⁴ The good news is that just about all pediatricians in Connecticut accept patients covered by Medicaid; the bad news is that almost half are limiting the number of these patients in their practice.

Inadequate reimbursement has implications for medical home implementation beyond access. Care coordination services are time consuming and rarely reimbursed by Medicaid or private insurance plans. Antonelli²² reported that 51% of all encounters with CYSHCN required care coordination, and that 11% of patients with complex conditions accounted for 25% of these encounters. These complex patients engaged office staff four times as long as less complex CYSHCN.

Inadequate data systems also make difficult the implementing of medical home components, especially care coordination.

Antonelli²² (p.1526) also reported that for a five provider practice, for one year "...the cost of care coordination accounting only for staff time use in this medical home model ranges from \$22,609 (if provider and staff costs are at the 25TH percentile) to \$28,500 (at the median) to \$33,048 (at the 75TH percentile)." Palfrey found that care coordination can amount to eight hours a week spent on the telephone for complex cases.²¹ Historically, payers have not reimbursed for telephone consultation or other care coordination activities, but the time required to coordinate care with schools, specialists, parents, and community services should be recognized as essential to providing comprehensive care, and should be reimbursed.

Inadequate data systems also make difficult the implementing of medical home components, especially care coordination. Providers are often unaware of the outside services their patients use, such as emergency departments, pharmacy services, and community-based intervention programs. Furthermore, without data systems to track utilization and outcomes, committing to practice improvement is difficult. Providers lack systematic information on how they are doing with regard to the principal medical home components.

Cooley also highlights the importance of role definition in implementing the medical home model.²⁷ Successful care depends on coordina-

tion of services and activities among several parties — families, health care practitioners, insurance plans, schools, and community services. Without established and agreed-upon roles for each contributor to a child's care, ensuring that services are provided in a non-duplicative and coordinated way that meets families' needs is difficult. Probably the best tool for defining roles is the written care plan,³⁵ which is not routinely used in pediatric practice.



MEDICAL HOME EFFORTS IN CONNECTICUT

Since 2000, the Connecticut Department of Public Health (DPH) has led a major effort to address medical home for CYSHCN under the Title V Maternal and Child Health block grant. The DPH initiative has several components and has been planned and carried out in collaboration with several public and private organizations within the state. Recent initiatives include: the Medical Home Learning Collaborative, Medical Home Needs Assessment, Medical Home Learning Academy, establishment of Regional Medical Home Support Centers (RMHSC) and Medical Home Advisory Council.

Medical Home Learning Collaborative

Connecticut began participating with the National Initiative for Children's Healthcare Quality's (NICHQ) Medical Home Learning Collaborative in April 2003. The goal was to create a statewide "systems approach to the medical home" that would result in a self-sustaining infrastructure.³⁶ The Collaborative's focus was on CYSHCN, and began with three practice sites. The Pediatric Center (Stamford) and Children's Health Center at St. Mary's Hospital (Waterbury) are still active in statewide medical home efforts. The third practice, Whitney Pediatric and Adolescent Medicine (Hamden), has continued an independent medical home improvement project.

In September 2003, DPH commissioned a process evaluation of the three pediatric practices participating in the learning collaborative, as well as the current role of Infoline, in information sharing and referrals. Eight key informants at each of the participating medical homes took part in an open-ended interview lasting between 1 to 2 hours. The participants — three physicians and five nurse practitioners, one of whom was a parent representative — described the following: the physician environment of the practice, the patient population, staffing, communication methods (including technology and care coordination tools), practice knowledge, family resources, and practice changes since implementation.³⁸

Without established and agreed-upon roles for each contributor to a child's care, ensuring that services are provided in a non-duplicative and coordinated way that meets families' needs is difficult.

Each medical home had a designated physician champion and a care coordinator, with the physician often sharing the coordinator role. All practices reported that care coordination required significant time and none could arrange or afford a dedicated care coordinator. All reported difficulties arranging for parental involvement in the collaborative. None of the practices had readily available technology to manage information, but all expressed an interest in having such technology provided. Two of the three practices expressed concerns about the challenges of transitioning older children to adult practices. All three practices expressed concerns regarding their communication with the two state CYSHCN referral centers, which had been providing specialty services since 1997. Concerns included: inability to connect with the appropriate person; failure to return phone calls; difficulty retrieving test results; difficulty in making referrals; and no clear role for the centers.

Participants identified these barriers even after participating in the learning collaborative, which was designed to provide practice support to reduce these barriers while implementing medical homes. The similarities between these evaluation findings and the barriers identified by Cooley³⁹ and discussed above are clear: practice, provider, and parental roles need clarification and effective dissemination; care

coordination needs increased support; and data collection, storage, and management require technological advancement and support.

Department of Public Health Needs Assessment

During the time that the three Connecticut practices were participating in the NICHQ learning collaborative, the Department of Public Health conducted a survey of Connecticut parents of CYSHCN⁴⁰ and 600 child health care providers to explore gaps in and barriers to services for children with special health care needs. Results were reported by DPH evaluation subcontractor, Matrix.⁴¹ A response rate of 36% (n=306) of parents and 39% (n=223) of providers was obtained. Parents reported utilizing medications (63%), occupational therapy (57%), speech therapy (56%), physical therapy (54%), and dental services (37%), but reported significant gaps in the provision of respite care, after-school, and summer day care (37%-43%), all services for which there is no payment system. Ninety-seven percent of the parent respondents reported paying out-of-pocket for these services. This service gap is particularly burdensome for families whose children require round-the-clock care. Forty-three percent of parents of CYSHCN reported having to leave the workforce to care for their children because of the complexity of their children's health care

needs and the lack of available respite care. The additional parent-reported barriers to accessing services were a lack of awareness of services and difficulties managing paperwork and coordinating care.

Providers' responses reflected the concerns reported by families, including inadequate resources, a lack of materials about CYSHCN, in particular respite care resources and other services, including awareness of Infoline," and the lack of sufficient respite care for families with CYSHCN.⁴² Insurance does not provide adequate coverage for the time and resources required to provide exemplary care coordination, perhaps the most critical aspect of successfully implementing medical home.

The following recommendations from DPH needs assessment would directly strengthen medical home within the provider community:⁴³ 1) explore systems level changes that would ensure the availability of care coordination services for children with special health care needs; 2) assist providers in meeting the complex needs of families of children with special health care needs by creating training opportunities and providing more support services; and 3) create opportunities for parents to serve as partners with providers in addressing their children's health care needs. As the following sections make clear, DPH has taken these recommendations seriously

in their planning for the future of CYSHCN services.

Medical Home Training Academy

In response to the recommendation for continuing provider education on medical home, DPH co-sponsored a Medical Home Training Academy in collaboration with the state chapter of the AAP, the Child Health and Development Institute of Connecticut, and the University of Connecticut Area Health Education Center. They conducted a one-day continuing medical education conference attended by more than 100 people. Topics presented included practice improvement, behavioral health and local systems of care, and developmental screening and surveillance. DPH has made the conference materials available through its website.

Regional Medical Home Support Centers Program

Using Title V block grant funds from the Maternal and Child Health Bureau, DPH funded five regional medical home support centers around the state through a competitive bidding process.⁴⁴ These centers were originally conceived as support centers for medical home practices in the treatment of children with medically complex needs within their regions. It was expected that each center would have identified practices to work with regarding providing care coordination and

ensuring linkage to highly specialized services, such as medically necessary technology and equipment. The centers also were expected to increase the number of practices in their regions that provided care in accordance with medical home principles. The centers replace the two regional centers that had been supporting CYSHCN in Connecticut for several years.⁴⁵

To fulfill contract requirements, the regional centers develop and maintain relationships locally and statewide, with primary care providers, specialists and specialty centers, other tertiary care providers, and community resources for CYSHCN and their families. A primary aspect of care coordination by centers is connecting these providers to each other and to CYSHCN and their families and caregivers. The regional centers and some affiliated practices use DocSiteSM for data collection, and serve as a data repositories for their regions. The centers are also charged with establishing and supporting the Regional Family Support Networks, as well as promoting care that is culturally appropriate, accessible, and family-centered. In addition, they coordinate respite services and provide DPH-approved extended services/goods to underinsured and uninsured families of CYSHCN, based on the availability of funds. These benefits are geared to a small group of children only — those with the most complex needs.

Medical Home Advisory Council

DPH has established a Medical Home Advisory Council to solicit advice on the implementation of the regional centers, as well as general medical home issues in Connecticut. State agencies responsible for health, early intervention, and social services are all represented on the Council, as well as several private organizations with interests in children's health. Parents also play an active role on the Council. In its first few months the Council has discussed evaluation of the regional centers, and is currently working to formulate a larger medical home dissemination strategy for the state.

Health Outreach for Medical Equality (HOME)

In addition to these four initiatives led by DPH, a publicly and privately supported demonstration project is underway at the Charter Oak Health Center at Connecticut Children's Medical Center, with facilitation from the Hispanic Health Council. *Health Outreach for Medical Equality (HOME)* is a two-year project jointly funded by the Connecticut Department of Social Services, Hartford Foundation for Public Giving, Children's Fund of Connecticut, and the Connecticut Children's Medical Center to provide care coordination and outreach to more than 1,200 Hartford children and families annually. The program targets children who miss

primary care appointments, transfer care among provider sites, use the emergency department for conditions that can be handled in the primary care site, and miss appointments for necessary follow-up care.

Outreach services bring these families into the primary care site, where care plans are developed in partnership with families and a designated care coordinator links families to other services and monitors implementation of the care plan.

The project evaluation will assess several factors related to implementation and processes of care as well as outcomes for children. Primary measures include: appropriate utilization of well-child services, on time immunizations, parent/caregiver satisfaction, emergency department utilization for asthma, and missed appointments. The ultimate goal of HOME is to demonstrate that when care coordination services are provided from the health care site, medical home requirements for access, coordination, family-centeredness, and continuous care are met.



IMPLEMENTING MEDICAL HOME IN CONNECTICUT

Three enhancements to current primary care systems are needed to move pediatric services in Connecticut toward a more comprehensive medical home model.

- Provider education coupled with tools and incentives for practice redesign are required at the individual practice level.
- Strategies for supporting practices in enhancing access and providing care coordination are needed to ensure that all children have medical homes.
- Data systems that allow providers to (1) link families to services, (2) monitor patients' utilization of services, (3) share information with other service providers without violating patient privacy, will facilitate coordination and continuous quality improvement and assist the state in monitoring medical home progress.

Provider education to facilitate practice redesign

Connecticut can look to other states for models of medical home provider education. In Illinois, pediatricians and family physicians can complete an on-line medical home training module and obtain medical home certification from the state Division of Specialized Care for Children. Training topics include: history

and core elements of medical home, examination of office practices to support medical home, partnerships with families, role of care coordination, and coding and reimbursement to support services for CYSHCN.⁴⁶ Once certified, providers are eligible to bill the state for care coordination and extended services provided to CYSHCN.

More than 150 child health physicians in Pennsylvania have completed a medical home learning experience through support from the federal Bureau of Maternal and Child Health. Dr. Alan Kohrt and colleagues (2004) developed and implemented "Educating Practices in Community (EPIC) Integrated Care" as a strategy to increase the number of Pennsylvania children with special health care needs who received care from a medical home.⁴⁷ Research on changing physician behavior suggests that traditional methods of education, such as conferences and grand rounds, and distribution of literature⁴⁸ have little impact. EPIC, a promising strategy for changing practice, is based on the academic detailing model. It involves onsite visits to physician practices to provide training to promote desired behavior change. It has been successful in the pharmaceutical industry, but recently has been shown to be effective in a variety of clinical decision-making areas, including blood transfusion practice,⁴⁹ antibi-

otic utilization⁵⁰ and management of psychiatric disorders.⁵¹ In Connecticut EPIC has been successful in changing practice in the areas of developmental monitoring, oral health, and child abuse and neglect.

Pennsylvania used EPIC in conjunction with the NICHQ learning collaborative model,⁵² to train more than 1,510 individuals, including 156 physicians and their office staff, and have eight practices that successfully completed the first phase and then served as mentors for nine newer practices joining the program.⁴⁷ More than 4,000 children were identified and served in this phase. Preliminary findings indicate that practices, with appropriate support, can and will implement components of medical home; that dissemination of medical home systems might happen more efficiently through mentorship programs; and that using "a hybrid of practice-based and community-based care coordinators may be the most comprehensive model for successful implementation of the medical home program."⁴⁷

...practices, with appropriate support, can and will implement components of medical home

Several of the resources needed to facilitate medical home implementation are available online. Evidence-based resources include:

- ❑ Utah Collaborative Medical Home Project at <http://medhome.med.utah.edu/>, which focuses on providing medical homes for all children.
- ❑ Center for Medical Home Improvement at www.medicalhomeimprovement.org, which is focused on children with special health care needs.
- ❑ Medical Home Mentorship Program from the AAP's National Center of Medical Home Initiatives for Children with Special Needs: This program provides a listing of state and nationwide mentorship opportunities for those who would like to develop or enrich medical home opportunities in their state. This network offers an excellent opportunity for rural providers, or those in areas without developed medical home support systems to locate similar providers for education and support. Information on the program can be found at <http://www.medicalhomeinfo.org/mentorship/index.html>.

The challenge remaining is to cull from the available educational opportunities and develop a coordinated and comprehensive professional development plan that is appropriate for primary care providers and their practice staff and can be supported and sustained within Connecticut. Much of the groundwork has been done in developing practice tools to facilitate medical home implementation. The AAP National Center of Medical Home Initiatives for Children with Special Needs (www.medicalhomeinfo.org) provides an extensive repository of information about and tools to assist with implementing medical home.

Tools of particular interest that can be found at the AAP National Center of Medical Home Initiatives for Children with Special Needs website:

The CSHCN Screener from the Foundation for Accountability. This is used nationwide and meets the MCHB criteria for determining special health care needs. See <http://www.medicalhomeinfo.org/tools/identify.html>.

The Medical Home Index from the Center for Medical Home Improvement. This valid, self-implemented tool allows providers to assess the “medical homeness” of their practices. Completion of the tool requires providers and staff to rate several specific aspects of their practice that serve as general measures of the seven components of medical home. The goal of this index is to facilitate practice improvement. The Pennsylvania Educating Practices in Community Integrated Care project validated a briefer version of the full Medical Home Index. Both can be located at http://www.medicalhomeinfo.org/tools/med_home.html.

The Medical Home Family Index is a self administered survey that families complete to rate 25 aspects of care delivered by their primary care provider. The survey asks about care coordination, communication, and compassionate care. The Medical Home Family Index is located at http://www.medicalhomeinfo.org/tools/med_home.html.

Comprehensive Care Plans, which support medical home implementation by outlining services needed, assigning responsibilities among families and professionals, and serving as monitoring tools, facilitate care coordination. The national Medical Home Learning Collaborative II has developed several templates of care plans for ongoing care for specific medical conditions as well as for emergency care. They can be found at <http://www.medicalhomeinfo.org/tools/assess.html>.

It is unlikely that pediatric providers will use these tools without education and support. The experience in Pennsylvania, and to a limited extent in Connecticut, has shown that educational efforts can be effective in changing practice. Educational efforts help facilitate utilization of the available tools and resources outlined in this section. In addition, incentive programs combined with education, such as the Illinois medical home model, do show promise for redesigning pediatric practice to support medical home implementation.

Improving access and care coordination

Improving access is critical to improving the health care of all children in Connecticut. Insurance coverage is the first step in addressing access. The US Census estimated 942,433 children from birth to age 19 in Connecticut in 2001,⁴⁴ with 71,000 (8%) children estimated to be uninsured.³⁰ In 2003, 3.6% of these uninsured children reported not receiving all the medical care they needed compared to only 0.4% among the insured.³⁰ Connecticut Voices for Children monitors HUSKY enrollment and serves as the lead agency for a broad-based statewide coalition of organizations concerned with children's and parent's access to health care. The coalition supports twelve local communities in their work to increase enrollment in HUSKY under the Robert Wood Johnson Foundation sponsored Covering Connecticut's Kids and Families initiative.⁵³

Although health insurance is necessary to ensuring children's access to health care services, it is not sufficient. While the number of children enrolled in Connecticut's Medicaid program, HUSKY A, increased dramatically from 2000 to 2005 (176,602 to 234,920), utilization of preventive health services by these children has remained below 60% since 1999.⁵³ This is below federally acceptable rates of health care utilization under SCHIP (80%).¹³ The outreach components of initiatives such as HOME are promising strategies for improving the utilization of primary care services by children enrolled in HUSKY.

Why do children who have health insurance still experience problems accessing care? The answers are not clear. Other elements of access to care, including location, transportation, language barriers, and appointment scheduling can present challenges to families' utilization of primary care services. One factor that has received extensive attention is reimbursement rates under the Medicaid program. Inadequate reimbursement affects access to both specialty and primary care services.⁵⁴ Not only do providers claim that reimbursement under Medicaid is too low to sustain a practice,³³ but that the Medicaid program, as well as private insurance companies, do not pay for care coordination services, which are critical to the medical home approach. It is estimated that care coordination activities cost a medium sized practice between \$22,000 and \$33,000 per year.²²



Broad-based policy initiatives aimed at public and private payers of health care are needed in Connecticut to address these reimbursement issues. There is substantial interest on the part of the legislature and state agencies to explore new models of organizing and paying for care coordination services as evidenced by the Department of Social Services’ support of the HOME demonstration project. The 2006 Connecticut legislature passed a bill that called for a pilot demonstration project to reimburse physicians for care coordination, extended care, and combined well and acute care visits. Enactment of this legislation will provide incentives for pediatric practices to implement some critical components of medical home.

The importance of care coordination systems to achievement of medical home objectives cannot be overemphasized. Such systems allow providers to connect children and families to needed services beyond the primary care site and even beyond health care, ensuring collaboration with schools, social services, mental health services, and other community-based programs. These systems can take many forms: they can be contained within the practice or they can be based in the community and serve patients from a variety of practices. Antonelli²² provides several examples of the former, and the Connecticut regional medical home support centers are good

examples of the latter. The care coordination function is crucial to the effectiveness of the medical home.

In Connecticut, access to community-based non-medical services for children with or at risk for developmental delays is facilitated by Child Development Infoline, which is operated by the United Way under the 211 information and referral program. This single point of entry to developmental and behavioral services for children from birth to five facilitates connection of more than 2,000 children each year from their medical home to community services, such as parenting support, speech and language services, and family counseling.⁵⁵ The success of the Child Development Infoline in increasing early identification of development delays and referral by primary care physicians,^{56,57} suggests the need to expand it to serve children through age 18.

The importance of care coordination systems to achievement of medical home objectives cannot be overemphasized. Such systems allow providers to connect children and families to needed services beyond the primary care site and even beyond health care, ensuring collaboration with schools, social services, mental health services, and other community-based programs.

Data systems

Data systems support medical home implementation in three ways. They can assist medical home providers in coordinating services, in continuously assessing their provision of care and improving their clinical and administrative processes. They also help larger systems, such as health plans and states, monitor the degree to which children have access to medical homes.

Data systems that support care coordination not only link patients to services, as described in the Child Development Infoline discussion, but they also inform providers about services their patients use outside of the medical home. For example, cross-site electronic medical records alert providers about when patients are hospitalized, use the emergency department, or see specialists. A few pediatric practices in Connecticut and the regional medical home support centers are using DocSiteSM, which maintains care plans and service utilization for children with special health care needs who use the service centers. Some large primary care practices, such as the site of the HOME project, do collect and maintain point of care data to track and monitor patient utilization and clinical information. The challenge remains to implement wider use of such tools by primary care providers. While electronic medical records are under consideration in

several primary care sites in Connecticut, it is unclear whether these systems will connect providers beyond their own practices to coordinate care with medical specialists and community-based services.

Data systems also are needed for continuous assessment of statewide efforts to improve access to and provision of care within medical homes. Practices can use data, too, to evaluate their own progress in implementing medical home principles. Data from the state Medicaid program and immunization tracking system are two examples of information that can be used to assess utilization of services, coordination of care, and continuity of care. Data for children insured by commercial carriers are scattered among the several insurance companies with no uniform reporting of service utilization. None of these data sets address the family-centeredness and cultural competency of care. However, providers can use the tools that have been developed and validated by the AAP and Center for Medical Home Improvement to assess the “medical homeness” of their care over time.



MOVING FORWARD

The following recommendations call for statewide efforts that will directly address the issues of practice change, care coordination, and data systems:

- ❑ Reduce the number of uninsured children by facilitating enrollment in Medicaid (estimate that 70,000 are eligible for Medicaid) and supporting legislative initiatives to expand eligibility.
- ❑ Support outreach efforts such as those in the HOME project to increase the well-child visit rate among children enrolled in HUSKY.
- ❑ Design and test interventions to improve access and utilization among Hispanic and African-American families who have children with special health care needs.
- ❑ Collaborate with Federally Qualified Health Centers and other providers as they design and implement systems to bring data collection and data sharing to the point of care.
- ❑ Design and implement educational and technical assistance initiatives, through EPIC in Connecticut, to facilitate implementation of medical home at primary care provider sites.
- ❑ Test care coordination models to determine how best to support care coordination activities within the medical home and advocate for reimbursement for practice and community-based care coordination services.

The following activities will facilitate medical home efforts that capitalize on initiatives underway in Connecticut and bring together agencies and providers interested in expanding medical home to reach all practices and all families.

- 1. Implement statewide training:** Based on dissemination strategies proven most effective,^{58,59} develop, distribute, and support implementation of an established “best practices” training program for providers on how to implement medical home. Include comprehensive efforts to reach all pediatric and family medicine providers statewide, and work to involve parents as partners. The EPIC program currently operated by the Child Health and Development Institute provides an excellent framework to do this. Modules should be pursued which address care coordination and other medical home components.
- 2. Track medical home model dissemination:** Track dissemination of the medical home model, including how providers/practices adapt and implement it. Continue to identify barriers that keep practices from implementing medical home components. Use lessons learned to refine training strategies, and develop state level supports, such as reimbursement mandates, to build a sustainable medical home system.

- 3. Evaluate the effectiveness of the ongoing movement towards medical home care:** Measure and track the extent of medical home care provided to assess Connecticut’s progress in ensuring a medical home for all children. Use validated tools such as the Medical Home Index developed by the Center for Medical Home Improvement²⁷ to evaluate individual practices in their efforts to implement medical home.
- 4. Plan for long term evaluation of specific outcomes:** Develop shared outcomes and objectives among agencies and providers and implement systems to collect and maintain essential data including: Medicaid encounter data and insurance claims data, family satisfaction data, measures of the “medical homeness” of care, and patient outcome data. Support the expansion of database capabilities at more pediatric sites and in conjunction with other state data-base development efforts.

5. Develop and advocate for statewide policies that enhance practices' abilities to implement medical home:

These policies would include assurances that provider activities that are critical to medical home, such as care coordination, are covered through reimbursement and that systems that support primary care practices, such as Child Development Infoline are expanded to meet statewide needs.



CONCLUSION

This report has reviewed the components of the medical home approach to providing child health services. After reviewing the evidence evaluating medical home, it is evident that children, families, and the health care system have much to gain in improved outcomes and more effective and efficient care. The major barriers to wide scale implementation in Connecticut are access issues that are defined mostly by lack of insurance coverage or inadequate payment for the services needed to sustain the medical home model.

Provision of medical home services is not more expensive than predominating models of delivery. In fact, medical home has the potential to save dollars by redirecting care from hospitals and emergency departments to primary care sites, avoiding duplication of services, and promoting better overall health. One aspect of medical home that requires extensive attention is the provision of care coordination services. These are underdeveloped and virtually unpaid, yet are critical to successful service delivery and realization of improved outcomes.

Models for provider training, practice redesign, improving access to care, and data systems are available and have been tested. These have the potential to address known barriers and are feasible in light of the progress already made in Connecticut in implementing medical home. The state is well-primed to expand current efforts and extend the medical home concept beyond children with special health care needs so that every child in Connecticut will have access to comprehensive, preventive, continuous, and coordinated health care through a family-centered medical home.

Provision of medical home services is not more expensive than predominating models of delivery.

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