



Children's Healthcare Access Program

2010 Annual Report

Submitted By:

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1 Executive Summary

The percentage of Kent County children enrolled in Medicaid increases every year; it's now approximately 40% of all children ages 0-17. Children with Medicaid often have limited access to preventive healthcare for a variety of reasons, including low Medicaid reimbursement rates. The Children's Healthcare Access Program (CHAP) is a collaborative pediatric medical home improvement project intended to improve health outcomes among children on Medicaid while better utilizing existing resources and decreasing costs. First Steps contracted with SRA International to evaluate CHAP, which was initiated as a three-year demonstration (pilot) project in August 2008. This report represents the findings from the second full year of the project (2010) and is based on the Long Term CHAP Evaluation Plan developed by SRA and First Steps.

Program Background

CHAP was developed and implemented by First Steps, a non-profit organization founded to strengthen, coordinate and advocate for the system of early childhood services in Kent County. Major partners involved in the development and implementation of CHAP include Priority Health, Helen DeVos Children's Hospital and Asthma Network of West Michigan (ANWM). CHAP works on three levels: system (i.e. increasing access to medical homes, working to improve the behavioral health system), healthcare provider (i.e. providing education and support to practices/clinics), and child/family (i.e. providing support services intended to improve children's health and assist families).

Two key indicators used to measure CHAP's value in reducing unnecessary healthcare costs are changes in emergency department (ED) visits and inpatient (IP) hospital admissions. A preliminary analysis shows decreases in both measures for practices associated with CHAP and more significant decreases for clients who have received CHAP support services. From the baseline year to 2010:

- Practice level ED visits declined 13.8% and IP admissions declined 12.3% if uncomplicated births are included, 5.6% excluding uncomplicated births. (Practice level data measures all Priority Health Medicaid enrollees at CHAP practices).
- ED visits among CHAP clients declined 35%, with a 62% decline in IP admissions in the 12 months following CHAP involvement compared to the 12 months prior to involvement. (CHAP clients include anyone who has received a tangible CHAP service).

To better assess the costs associated with CHAP and those costs avoided, two cost benefit analyses were conducted: a fiscal CBA, which takes into account the costs accrued and the benefits realized by the health plan and a social CBA which conveys whether the investment makes sense from the perspective of society. Both the social CBA and fiscal CBA are legitimate ways to evaluate CHAP, but they are designed to answer different questions.

Based on the CBAs, one can draw several conclusions about the benefits of the program relative to the costs. First, after two years of the demonstration project, Priority Health has recouped the cost of its financial investment in increased Medicaid reimbursements and performance-based incentives to providers, through the reductions in emergency department visits and hospitalizations.

Second, and perhaps most important, the social benefit-cost analysis is positive. Looking at the data from a variety of perspectives, the immediate social benefits exceed the costs by one fifth. That is an extremely conservative analysis and can be expected to increase over time, since the benefits of good health in childhood are compounded as people age.



In addition to the economic returns associated with CHAP, many other positive outcomes were realized at the system, provider and child/family levels.

Systems-Level Outcomes

- In 2010, the number of private practices associated with the program increased to 14 with the addition of DeVos Adolescent Medicine Clinic and Baxter Community Center Clinic.
- Since the program's inception in 2008, CHAP has expanded access to a medical home by creating 1,966 new openings in participating practices and clinics.
- A linkage between CHAP/ANWM and Helen DeVos Children's Hospital resulted in a new protocol referring all inpatient asthma admissions to CHAP/ANWM, creating a more efficient system of delivering services to children.
- CHAP provided guidance and technical assistance to Wayne CHAP, Shiawassee CHAP, and Kalamazoo CHAP, which moved these counties closer to developing and implementing the model locally.

Healthcare Practice Level Outcomes

- Participating practices improved their averages on the asthma practice profile scores from 2009 to 2010, demonstrating an increase in provider knowledge and fidelity to asthma care and management standards as promoted by the National Institutes of Health.
- Fidelity to the Otitis Media (OM) program (ear infections) was demonstrated by 8 out of 9 practices using the OM educational materials, and all participating practices indicated they regularly prescribe AB otic prescriptions.
- Providers demonstrated a willingness and ability to take ownership of the causes championed by CHAP through the program's Pediatric Leadership initiative.
- High levels of healthcare partner satisfaction with CHAP were expressed in interviews with CHAP providers, practice managers, and practice staff. Practice managers and providers reported CHAP has provided tangible benefits through resources and referrals.
- CHAP implemented a plan to assist specific practices to improve their well child visit, immunization and lead testing rates. These child health benchmarks (Healthcare Effectiveness Data and Information Set, or HEDIS measures) are used to measure health plans and practices, and financial incentives are linked to improvements. In the fall of 2010, CHAP worked with the GVSU Family Health Center, an advanced practice nurse-managed clinic, to hold four open access well child and immunization clinics.

Child- and Family-Level Outcomes

- Feedback from the families served by CHAP continued to be positive in 2010. Specifically, clients reported highly favorable opinions of the CHAP asthma educators, their interactions with them, and the positive impact their education and assistance has had on their child's health.

From the program implementation in 2008 through the end of 2010, CHAP received approximately 9909 referrals for 5834 unique children. In total, CHAP has served 3681 children (63% of those referred) with tangible services including asthma and non-asthma related home visits, telephone consultations, education, translation and transportation services. There are a variety of reasons that the remaining 37% of children referred to CHAP did not receive services,

including refusal of services, inability to contact and contact by mail only. The majority of the children served for whom the program has demographic data were 5 years old or younger (56%) and either African American (34%) or Hispanic (26%).

Recommendations:

- **Focus efforts on expanding healthcare access for children** - Expanded access to healthcare for children, as defined by an increased number of practices accepting Medicaid, was less in 2010 than in 2009. As this is a primary program goal, CHAP efforts in 2011 should be focused on the methods that will increase access for children to healthcare, namely adding partner sites, which generally comes from adding health plans or increasing health plan buy-in for expansion to additional partnering practices.
- **Explore sustainability options** - CHAP's initial demonstration funding will run out in December 2011. As such, sustainability for future efforts is a key need in 2011. CHAP should use a dual approach of evaluation current resource use (program scope) to determine cost effective implementation, as well as exploring various funding options.
- **Continue to facilitate partner and stakeholder feedback** – CHAP receives important feedback on partnerships, implementation and programming from the partners' perspectives through partner feedback forums, such as provider meetings, and evaluation activities. Especially in light of the sustainability issues at the system level, partner and stakeholder input into future decisions is key during 2011.
- **Explore program efficiencies** – CHAP protocols for client engagement and program operations should be explored for ways to maximize efficiencies while still providing a high quality of service. Exploring avenues of improved efficiencies will also benefit sustainability for future efforts. CHAP can explore efficiencies through review of evaluation findings, running further data analysis into current program processes, and reviewing programming decisions made by other CHAP programs to adopt best practices as they are available.
- **Enhance outcome data collection** – The CHAP demonstration project will conclude in December 2011 and a comprehensive evaluation of the demonstration period is planned for early 2012. It is imperative for this final evaluation to collect and utilize more complete outcome data in areas such as Otitis Media, Asthma and Behavioral Health in order to provide program justification for future efforts and enhance the cost-benefit study's estimation of the social values of program outcomes. Next steps to ensure the comprehensive evaluation is possible include reviewing evaluation plans with the program, identifying any gaps in data collection that may exist and working to ensure those gaps are resolved prior to the demonstration project's conclusion.

2 Introduction

In 2008, First Steps implemented the Children's Healthcare Access Program (CHAP). CHAP is based on the premise that all children deserve to have access to quality care and its primary goal is to improve health outcomes among children on Medicaid while better utilizing existing resources and decreasing costs. CHAP is modeled after similar initiatives in other states, particularly the Colorado Children's Healthcare Access Program (CCHAP) and Community Care North Carolina (CCNC), that have led to both healthier children and cost savings in the delivery of healthcare. Major partners include First Steps, a community organization that is developing a coordinated system of early childhood services in Kent County; Priority Health, a west Michigan-based managed care plan that provides commercial and Medicaid coverage; and Helen DeVos Children's Hospital, a 206-bed children's hospital in Grand Rapids, MI. In addition, First Steps contracts with the Asthma Network of West Michigan, whose asthma educators and social workers provide services to CHAP clients. First Steps and the Asthma Network of West Michigan are partners in delivering the home-based case management services, which are Medicaid-billable, and the Asthma Network of West Michigan provides content expertise about asthma to CHAP.

As part of the program, Priority Health offers financial incentives to primary care medical homes to encourage them to open access to additional children enrolled in Medicaid. First Steps provides CHAP services designed to facilitate access for high-risk patients and families in participating practices. Services provided by CHAP include initial and ongoing education, asthma disease management, transportation, language translation, social work services, and connection to community resources. CHAP hopes to demonstrate that by providing publicly insured children in Kent County with a high-quality, consistent medical home the result will be healthier kids as well as reduced costs to the community.

In December 2009, SRA submitted an evaluation report that focused on the pilot year of the CHAP program. The pilot evaluation covered select process and implementation topics typical to a program in its inaugural year, as well as limited outcome measures related to CHAP's asthma initiative and cost effectiveness. Subsequently, SRA developed a long-term evaluation plan for CHAP (CHAP Long Term Evaluation Plan) that was created to examine the outcomes associated with separate elements of CHAP at three levels: system, healthcare partners and children/families. This evaluation report expands upon the pilot evaluation and follows the outline of the CHAP Long Term Evaluation Plan.

CHAP was conceived and implemented by First Steps as a demonstration project, expected to provide services through 2011. At the conclusion of the 2011 demonstration phase (approximately 3 years of service provision), a more conclusive, in-depth evaluation that examines outcomes developed in the CHAP Long Term Evaluation Plan will be conducted.

2.1 *Evaluation Methodology*

The evaluation team used a mixed methods approach to collect program data. The evaluation team consisted of CHAP Program Manager Maureen Kirkwood, CHAP Medical Director, Dr. Tom Peterson, and CHAP program staff; SRA Evaluation Director Dr. Cynthia Klein and SRA evaluation staff; Dr. Rebecca Malouin, Michigan State University, who served as the local evaluation liaison; and Dr. Clive Belfield, City University of New York, who developed the framework for an ongoing cost-benefit analysis independent of the Priority Health.

The primary outcomes evaluated for CHAP in 2010 are presented on page 7 in the CHAP logic model that captures program inputs, activities, and longer-term outcomes as well the program impact. This logic model depicts the three levels of outcomes expected from CHAP: system, healthcare partner and children and family levels.



CHAP Annual Evaluation Report 2010

CHAP LOGIC MODEL

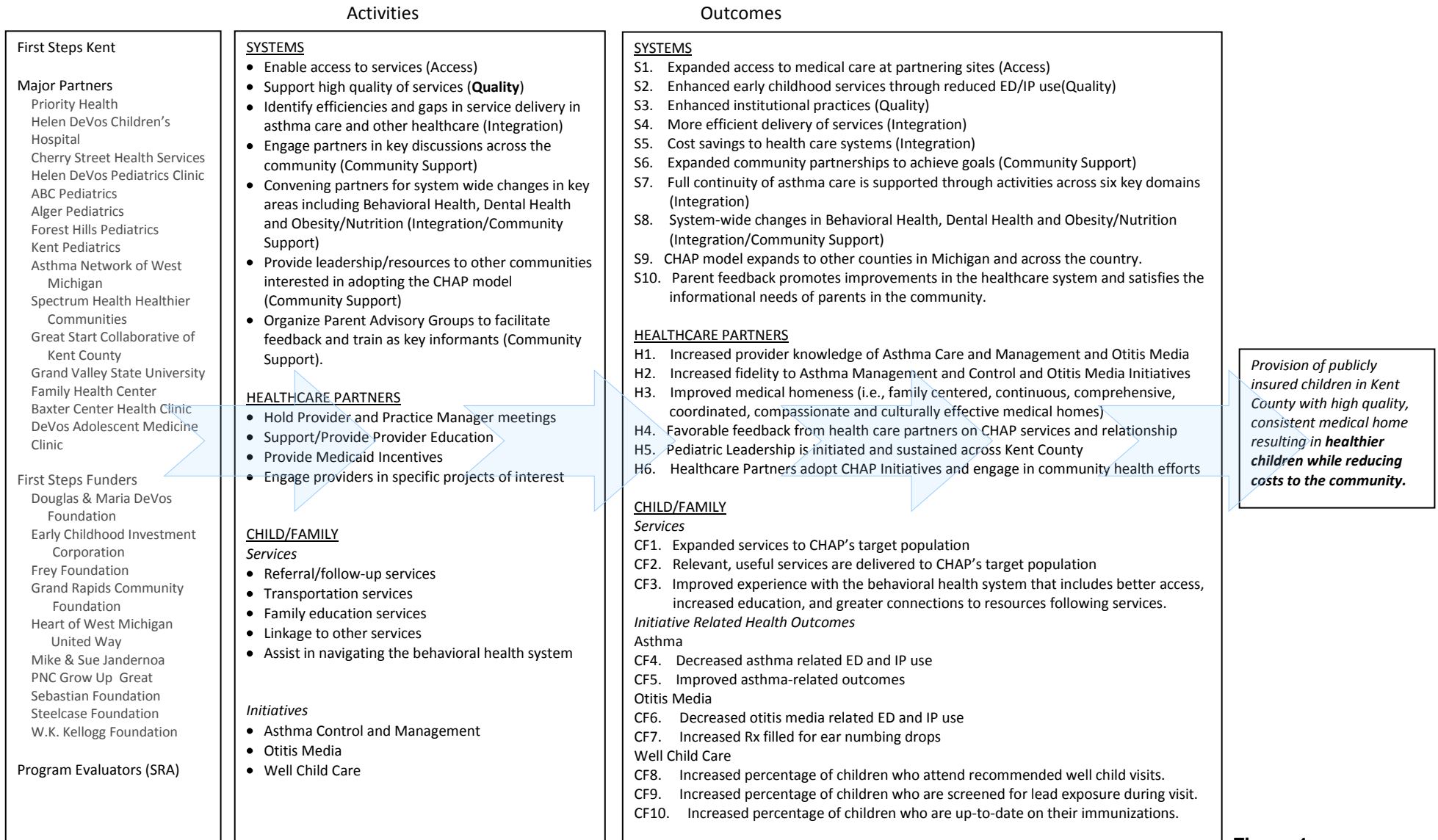


Figure 1

Mapped onto the three levels served by CHAP (Figure 1), the long-term goals of the program are as follows:

- At the *system level*, CHAP strives to a) change the medical system within Kent County such that low-income families have the access to the quality primary healthcare services and support they need to stay healthy (*access, quality and community support*) and b) affect costs savings associated with increased access to primary healthcare services and support for children receiving Medicaid (*integration*). For additional definitions of system level terminology as it relates to First Steps and CHAP, please see Appendix A.
- At the *healthcare partner level*, CHAP strives to connect health care providers to resources and mobilize accessible family-centered, continuous, comprehensive, coordinated, compassionate and culturally effective medical homes.
- At the *children and family level*, CHAP strives to improve health outcomes as a result of expanded access to health care for children and support to families. It is within the children and families level that CHAP-incubated initiatives guide anticipated health outcomes. To date, CHAP has incubated initiatives with the aim of improving asthma- and otitis media-related health outcomes.

2.2 Evaluation Data

Table 1 presents the evaluation data collection methods, followed by brief explanations of each method.

Table 1. Pilot Year Data Methods

Evaluation Area	Written Surveys	Interviews	Focus Groups	CHAP Database	Priority Health Claims Data	Tracking	Document Review
Process and Implementation		X		X			X
Children and Families	X		X	X	X	X	
Healthcare Partner	X	X				X	X
System-level		X				X	X

INTERNAL FEEDBACK

Activity Tracking Spreadsheets: Throughout the year, CHAP staff documented meetings and outcomes from collaborative efforts using the First Steps evaluation website online trackers. SRA reviewed this information and obtained contextual clarifications on outcomes.

Program Data Analysis: CHAP client service data was transferred to SRA from the CHAP Access database, covering clients served from program inception through December 31, 2010. Descriptive demographic and services data were analyzed by SRA.

Staff Interviews: SRA in-person interviews with CHAP staff during November 2010.

EXTERNAL FEEDBACK

Focus Groups: Focus groups were conducted with parents of asthma clients to learn how they perceived and used services provided by CHAP. Two focus groups were conducted, each targeting asthma clients, one with English-speaking clients and one with Spanish-speaking clients. The English-speaking focus group was moderated by Dr. Rebecca Malouin on March 9, 2011, while contractors Ricardo and Tricia Zelaya moderated the Spanish-speaking (SS) group on March 10, 2011. A total of 17 parents of clients participated in the focus groups in 2010.

Document Review: SRA reviewed minutes from the CHAP advisory committee, provider meetings and practice manager meetings. Additionally, SRA reviewed CHAP asthma practice profile results.

Practice-level Key Informant Interviews: In the summer and fall of 2010, key informant interviews were conducted by faculty at Michigan State University with physician champions, practice managers and staff from practices participating in the Children’s Healthcare Access Program. The purpose of the interviews was to determine the perceptions and opinions of the Children’s Healthcare Access Program (CHAP). All key informant interviews were conducted by phone, audio-recorded with permission from the participant, and transcribed. The project was approved by the Michigan State University Biomedical and Health Institutional Review Board. Six physicians, six practice managers and three staff members participated in the key informant interviews for a total of fifteen participants.

Community-level Key Informant Interviews with Key CHAP Leadership: Key informant interviews were held from March 4, 2011 to April 4, 2011 by Dr. Rebecca Malouin. The purpose of the interviews was to better understand the leadership and stakeholder views on project collaborations, successes, barriers, and changes. A total of 16 interviews were conducted, each lasting 30-60 minutes. Example of stakeholder participants included Commission members, funders, organizational collaborators and lead program staff.

Priority Health Data Analysis: SRA received and analyzed de-identified Priority Health emergency department and inpatient hospitalization claims data to determine rates of use for the CHAP client population.

2.3 Evaluation Years and Findings

For reporting purposes, CHAP Program Year 2009 includes clients and services provided from 1/1/2009-12/31/2009. Similarly, CHAP Program Year 2010 includes clients and services provided from 1/1/2010-12/31/2010. It should be noted this is a change from the initial CHAP evaluation report, shifting the timeframe evaluated from the 08/2008-07/2009 original program year, thus 2009 and 2010 data is evaluated, as appropriate.

Data findings are provided for each level of CHAP: Children & Families, Healthcare Partners, Systems, and Process & Implementation. Within each section we have included the evaluation question(s), contextual factors (as needed), and outcomes. While the focus of this report is 2010 outcomes, as noted previously, we have provided outcome data relevant to both program years (2009 & 2010), in order to track progress over time.

To facilitate interpreting evaluation findings, though context is provided as possible, SRA has created simplified outcome results characterized using the following symbols:

- Outcome achieved
- Outcome partially achieved
- Outcome not achieved

At the end of this report, lessons learned from the evaluation are discussed and recommendations for future evaluation efforts are provided.

3 System-Level Evaluation

Based on the goals and activities that comprise the *system-level* of the CHAP program (Figure 1) SRA developed long-term evaluation questions that map to the four impact areas identified in the *First Steps System-Level Evaluation Plan: Access, Quality, Integration, and Community Support*. The findings presented in this section evaluate indicators for each system-level goal and corresponding evaluation question.

3.1 Expanded Access

Question Has CHAP expanded access to primary care at partnering health care sites?

Context One of CHAP's fundamental goals is to expand primary care access for uninsured children in Kent County. CHAP uses work plans developed with each healthcare partner to expand access to services.

Findings CHAP has achieved success in expanding access to primary care at partnering health care sites as evidenced by achieving outcomes in adding partnering practices and increasing new openings and hours of service for clients at partnering practices. Specific outcomes for indicators related to expanding access are presented below:

- ✓ Increased number of private practices associated with CHAP from 11 original practices to 14 practices by 2010:
 - added GVSU in 2009
 - added DeVos Adolescent Medicine Clinic and Baxter in 2010
- ✓ Increased total number of new openings created (baseline 13,392) to 15,099 in 2009 and again to 15,358 in 2010¹
- Increased expanded hours of service - in 2009, Cherry Street increased clinical time for providers by 13% and added evening and weekend hours. DeVos Pediatrics allowed same day appointments. However, in 2010, fewer hours may have been available due to some CHAP practices implementing electronic medical records (EMR)²
- ✓ Increased total number of children reached by services - 3681 children served over since program inception (new children entering services = 709 in 2008, 1894 in 2009, and 1078 in 2010).

Anecdotally, from the 2010 practice-level key informant interviews, 11 of 14 practice staff interviewed reported CHAP had improved access at their practices. The most frequently mentioned changes were:

- practices opened to new patients
- have increased their same-day appointments
- CHAP has allowed practices to hire more providers and increase their hours of operation
- CHAP transportation assistance has helped them to improve accessibility

In addition, CHAP was perceived by stakeholders interviewed as improving access for children and families to medical homes through the ability to enroll new children within clinics and expanded hours at the various offices.

¹ These numbers are approximate due to fluctuations that occur in Medicaid members and members being discharged from CHAP practices.

² EMR requires a practice to significantly reduce the number of patients they see in a day for a period of several months, while providers and staff are learning the new system

3.2 Early Childhood System (Quality)

Question Has CHAP improved or enhanced early childhood services within Kent County?

Context CHAP strives at the systems-level to improve or enhance the quality of early childhood services available to uninsured children within Kent County. When viewed in aggregate at CHAP sites (i.e., not by individual healthcare partner), several objective and subjective indicators can show improvement in services over time. An objective indicator for improved services is the Priority Health annual emergency department (ED) and inpatient hospitalization (IP) use for all CHAP members per 1000 member months. This is used to determine whether these rates are decreasing uniformly regardless of participation in specific services. Subjective indicators of improved services are high levels of partner and client satisfaction.

Findings Among CHAP clients there were decreased rates of emergency department and hospitalization rates over time. As shown in Figures 2 and 3³, the trend among both practice-level (i.e. “CHAP –eligible”) members and CHAP clients was a decrease in ED use, with practice-level rates decreasing by 13.8%, while CHAP client rates decreased by 35%.

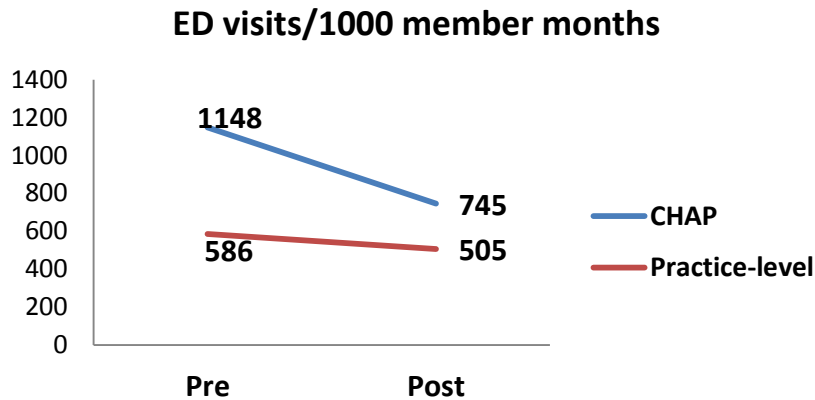


Figure 2

A similar trend was observed for in-patient hospitalizations, with practice rates decreasing by 12.3% including uncomplicated births or 5.6% excluding uncomplicated births, and CHAP client rates decreasing by 62%.

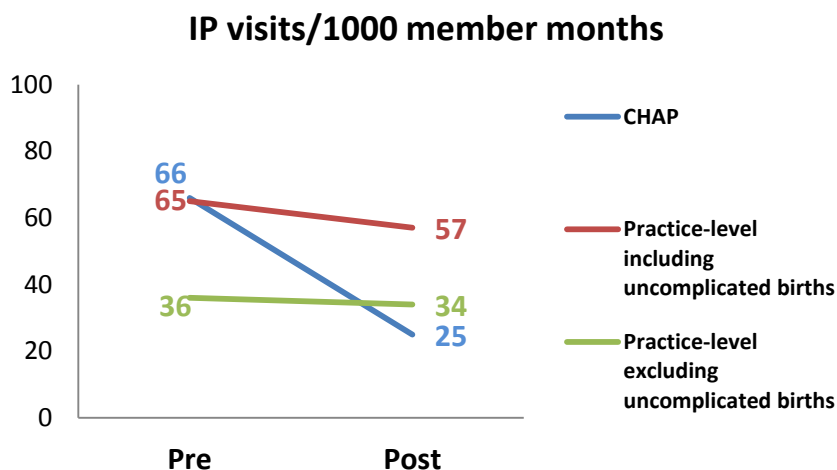


Figure 3

³ The pre timeframe for practice-level data was 8/2007-7/2008. CHAP pre was the 12 month period immediately prior to each client’s first date of referral.

- High levels of partner and client satisfaction with CHAP were expressed in partner-level interviews and client focus group feedback. Practice managers and providers reported CHAP has provided tangible benefits through resources and referrals. They reported additional staff members have been hired and feel empowered to complete the tasks. For these practices, CHAP is viewed as a valuable resource that helps to improve the practice. Practice managers and providers reported the quarterly provider meetings were helpful because they:
- were able to meet and connect with other professionals.
 - liked hearing what other practices are doing.
 - liked meeting colleagues working through some of the same practice issues.

Overall, client feedback from the focus groups on CHAP asthma services was very positive. Clients reported:

- highly favorable opinions of the CHAP asthma educators, their interactions with them, and the positive impact their education and assistance has had on their child's health.
- asthma action plans were very useful, giving them a roadmap to follow when their child has an episode and putting their family, school and doctor's office on the same page.
- they use the emergency department less since they began using CHAP services.

3.3 Institutional Practices (Quality)

Question Has CHAP enhanced institutional practices at partnering healthcare sites?

Context At the system level, CHAP seeks to change institutional practices in line with industry best practices related to "medical homeness". When viewed in aggregate across all CHAP sites, the program should see an increase in best practices utilized by healthcare partners and an improvement in medical homeness scores over time. The indicator used to measure outcomes in institutional practices in 2010 was qualitative (anecdotal) descriptions of key institutional practices.

Findings From practice-level key informant interviews, when asked how the quality of service offered by their practice had changed as a result of participating in CHAP, the majority responded CHAP had helped their practice to improve quality of services offered to patients. Examples provided included:

- Staff are more educated about the concept of a medical home, which allows them to communicate this to patients.
- Practices have increased contact and communication with their patients, which has allowed them to become more aware of patient barriers such as transportation and referrals.
- Practices have grown in size and are able to take more Medicaid patients.
- Practices are communicating better within their practice and with other practices in the area.

3.4 Efficiencies (Integration)

Question Has CHAP created more efficient delivery of services (i.e., less overlap, less gaps)?

Context For the Integration impact area, a key goal is to integrate delivery of services in order to minimize gaps and avoid overlap in these services. Integration of services is tracked qualitatively through CHAP trackers and summaries of practice manager, provider, and workgroup meetings describing outcomes of partnership activities.

Findings The CHAP manager participated in community relationship building meetings throughout 2010 with many community stakeholders. The developments that occurred in 2010 as a result of collaborative efforts led by CHAP (to create efficient delivery of services) included:

- Collaboration with the Helen DeVos Pediatric ED to implement new referral protocol to CHAP
- Working to improve ED education to patients about medical home
- Developed new linkage between CHAP/ANWM and Helen DeVos Children's Hospital inpatient unit, as a result, all inpatient asthma admissions will be referred to CHAP/ANWM
- Coordinating services with Priority Health Medicaid to avoid overlapping services (i.e. transportation and asthma case management)

3.5 Cost-benefit (Integration)

Question Has CHAP demonstrated a cost savings to the health care system?

Context In order to demonstrate the future sustainability of CHAP, the program must demonstrate a cost savings to the health care system. Economic data detail the costs associated with the program and are calculated and provided by PH. An independent cost-benefit analysis⁴ is also conducted by the evaluation team to determine costs avoided as a result of the program to determine any cost savings.

Findings The Children's Healthcare Access Program (CHAP) is intended to improve children's health and wellbeing while also better utilizing existing healthcare resources. By investing early in healthcare, it is possible to save on resource use later, e.g. by reducing emergency room visits, and to provide children with a better foundation for development into adolescence and adulthood.

One way to evaluate CHAP is by undertaking a Cost-Benefit Analysis (CBA). This method treats CHAP as an investment and investigates whether the returns on this investment exceed the expenditures, i.e. whether the benefits of the program – valued in monetary terms – exceed the costs.

There are several critical factors in performing a CBA.

First, it is necessary to decide which costs and which benefits to count. Conventionally, CBAs are supposed to take into account all costs and all benefits, regardless of who incurred the costs and who reaped the benefits. This approach is called a 'social CBA' and indicates whether society is using resources appropriately. Traditionally, it is used by government agencies and also is common among philanthropic agencies as it allows them to compare all their social investments using a common framework. Other types of agencies can perform a CBA from their own perspective, taking into account only their costs and their benefits. This approach is called a 'fiscal' or 'spender' CBA.

⁴ The independent CBA was conducted by *Dr. Clive Belfield, Assistant Chair of the BBA Program, City University of New York, Queens College and Co-Director, Center for Benefit-Cost Studies in Education, Teachers College, Columbia University*

Second, it is important to consider the full set of benefits, even if these are hard to measure or are not immediately observable. In the case of CHAP, it is relatively easy to value health care treatments, but less easy to assign a value to being in good health. The value of good health is not just the savings in medical bills. Also, the benefits of effective health care may last for a long time: research has shown that poor health in childhood is associated with poor health in adulthood. For a social CBA, it is appropriate to extrapolate forward to consider the lifetime value of better health in childhood.

Both the social CBA and fiscal CBA are legitimate ways to evaluate CHAP. SRA has derived a social CBA for CHAP; this conveys whether the investment makes sense from the perspective of society. Priority Health has performed a fiscal CBA of CHAP, looking at the costs and benefits from its perspective. Both are useful, but they are designed to answer different questions. They cannot be merged to provide a single economic answer, nor can one be used instead of the other.

Analytically, a fiscal CBA typically produces a lower benefit–cost ratio than a social CBA. Fiscal CBAs consider the consequences from one perspective and often do not incorporate the longer-term benefits of social investments.

Sections 2 and 3 below present the full social costs of providing CHAP and then the full benefits of CHAP. This allows us to derive a social cost–benefit ratio for CHAP. Next, these findings are compared with those from the fiscal CBA by Priority Health, with a description of how the two analyses differ.

The Costs of Providing CHAP

CHAP expenditures are for telephone counseling, asthma case management, transportation, family education, and connections to community resources. CHAP also liaises with practice/providers and other agencies and works to improve the quality of primary care medical homes. The ingredients method is used to estimate the costs.ⁱ Expenditures for CHAP are approximately \$516,000 (2008-09) and \$592,000 (2009-10). However, this does not include: payments for rental space; Priority Health Medicaid reimbursements for sick child visits; contributions from the Early Childhood Investment Corporation and the Great Start Collaborative (for capital and research and development); and indirect costs to the provider sites. Some of these elements should be included in a final costs analysis but it is not possible to separate out the exact amounts because budgetary data at this level of disaggregation is not available. The Medicaid enhanced reimbursements can be estimated for these years but reflect improved medical care for children and so should not be counted in the direct costs of providing the program.

CHAP services are grouped into two categories: telephone referrals, requiring telephone counseling and approximately 0.1 home visits per case; and asthma case management, requiring telephone counseling and approximately 4-8 home visits per case. In 2008 there were 709 clients; in 2009 there were 1,894 new clients; and in 2010 there were 1,078 new clients.ⁱⁱ From a basic costs analysis, average CHAP spending per new client is therefore approximately \$510.

The Benefits of CHAP

The primary goal of CHAP is to improve health and wellbeing for children. Improved health reduces costs in two ways: there are savings from more efficient use of medical resources (direct savings); and there are savings to families and children who value improved health itself (social savings). From Kent County's perspective, both direct and social savings should be counted.

For the direct savings, changes in emergency department visits and changes in hospitalization rates are counted. For social savings, currently there is only data available on lost days of school. Because there are many other potential direct and social benefits, this analysis is conservative. For example, CHAP is likely to improve access to care, lead to more effective and regular care, and provide the advantages of having a 'medical home'. This should lead to social savings for

families. Poor health means lost wages, medical bills, and psychological costs, as well as long-term adversities in terms of future poor health and lower human capital. These social consequences might be at least one-third as large as the direct medical expenditures. However, they are hard to measure and hard to value in money terms so they are excluded from these calculations.ⁱⁱⁱ

The direct medical benefits are calculated simply as the numbers of reduced emergency department (ED) visits and hospitalizations (for all treatments) times the unit cost of each. For the purposes of this analysis, we estimate the cost per ED visit at \$220-\$450 and the cost per hospitalization at \$2,500-\$4,400 for an average 2-day length of stay.^{iv} These cost figures represent the value of the actual resources required by the healthcare system. They are not the same as the amount a hospital might get reimbursed by Medicaid or the amount that a hospital might charge per ED visit or hospitalization. This distinction is important since reimbursement rates are much lower than actual costs.

For the social savings associated with more days in school, this analysis utilizes the ‘health production function’ estimate by Dickie (2005) where each lost day of school is valued at \$120.^v

CHAP data is used to calculate the size of the benefits.^{vi} During the 12 months prior to entering services for CHAP clients, there were 2,523 ED visits; in the 12 months following their program start date, these clients had 1,742 visits. Hence, there was a reduction of ED visits of 781. The net saving is therefore \$261,640. Similarly, during the 12 months prior, CHAP clients had 145 hospitalizations; during the 12 months after enrollment, these clients had 45 hospitalizations. The reduction in hospitalizations was therefore 100. The net saving is therefore \$345,000.

Finally, CHAP asthma clients missed 626 days of school in the year pre-enrollment; at discharge from the services, these children had missed only 136 days. This means 490 extra days of schooling. The total social value of these extra days of schooling is \$58,800.

The Social Value of CHAP

This section compares the costs of CHAP to the benefits. This is shown in Table 1. The benefits of CHAP are \$665,440. The annual costs of CHAP are \$554,070 (using the average of the two years 2008-2010). The net saving is therefore \$111,370. Even if only the direct medical expenditures are counted, for every dollar spent on the program, more than one dollar is saved elsewhere in the medical system. Conservatively, the benefits are 20% higher than the costs.

Table 1
Economic Costs and Benefits of CHAP

	Total amounts
Benefits of CHAP [B]:	
Fewer ED visits	\$261,640
Fewer hospitalizations	\$345,000
More school days	<u>\$58,800</u>
Total	\$665,440
Program delivery cost [C]	\$554,070
Net saving [B - C]	\$111,370
Benefit-Cost ratio [B/C]	1.20

Notes: Savings are in 2011 dollars to nearest \$10.

Importantly, this is an extremely conservative calculation of the social benefits. Given data constraints, it is not possible to account for all the private and social costs associated with the

program. Specifically, the true value of health is undercounted in this analysis; due to data limitations, only one benefit to families from improved health has been counted (the value of the school days). Plus, this assumes that there are no long-term benefits of CHAP, i.e. any gains in child health are assumed to have no consequences for adolescent or adult health.

If the full value of health was included, this would more than double the value associated with ED visits and hospitalizations. People value good health at much more than the cost they pay for medical treatments.^{vii} Also, if it is assumed that good health in childhood is valuable in adulthood, that would at least double the social value; in fact, early childhood investments have even higher returns.^{viii} Thus, SRA is even more confident that CHAP passes a social CBA test.

The Fiscal Value of CHAP

A fiscal CBA was conducted by Priority Health (PH) and looks at selected costs and benefits. Priority Health found that its 2010 expenses due to increased provider payments for the program were \$279,550 and its savings due to reduced emergency department visits and inpatient admissions were \$269,200. Looking only at those selected costs, the expenses exceed the savings by \$10,350 (or 4%). This suggests that for PH, CHAP is just below break-even.

The fiscal CBA differs from the social CBA in several ways. Some of these reflect the fact that the fiscal CBA is answering a different question than the social CBA. For example, the fiscal CBA is not intended to consider the social value of health, either in the short run or the long run. It also assumes that all the benefits of CHAP are captured in ED and inpatient hospital stays.

The fiscal CBA also uses different unit cost estimates for ED visits and for inpatient stays. The estimate for ED visits is lower than the social CBA estimate and the hospitalization value is slightly higher than the social CBA estimate. One reason why ED visit unit costs are lower is partly because the fiscal CBA assumes that only low-cost ED visits will be averted; another important distinction is that the social CBA is interested in the full costs of treatment, not the financial implications for PH based on reimbursement rates. Most ED visits involve the same fixed costs of diagnosis and administration and so even if reimbursement rates differ, costs might not.^{ix}

Finally, the fiscal CBA uses lower estimates of the number of ED visits averted and the number of hospitalizations averted^x. It also uses rates for these, rather than the absolute numbers because it is focused on the CHAP client base (approximately 15,000), while the social CBA focused solely on clients who have received direct CHAP services (2,197 children).

Sensitivity Tests on the Value of CHAP

Given the above differences, it is important to see how the economic value of CHAP is affected by alternative assumptions. There are several key variables: (i) whether to use CHAP client numbers or CHAP population numbers; (ii) whether to use PH costs or SRA costs; and (iii) whether all benefits have been properly accounted for. Three ‘downward’ sensitivity tests are summarized in Table 2; three ‘upward’ sensitivity tests are summarized in Table 3.

Table 2
The Economic Costs and Benefits of CHAP
Downward Sensitivity Tests

	[1] Using fiscal unit costs	[2] CHAP-eligible populations	[3] Including PH expenses
Benefits of CHAP [B]:			
Fewer ED visits	\$70,700	\$13,400	\$261,640
Fewer hospitalizations	\$369,650	\$200,100	\$345,000
More school days	<u>\$58,800</u>	<u>\$58,800</u>	<u>\$58,800</u>
<i>Total</i>	<i>\$499,150</i>	<i>\$272,300</i>	<i>\$665,440</i>
Program delivery cost [C]	\$554,070	\$554,070	\$833,620
Net saving [B - C]	(\$54,920)	(\$281,770)	(\$168,180)
Benefit-Cost ratio [B/C]	0.90	0.49	0.80

Notes: Savings are in 2011 dollars to nearest \$10.

Model [1] of Table 2 calculates the social CBA using the PH estimates of unit costs for ED visits and hospitalizations. The benefits are estimated to be \$499,150. These benefits are \$54,920 lower than the costs, with a benefit-cost ratio of 0.9. In other words, the program recoups 90% of expenditures. But these unit costs are almost certainly too low as they are based on reimbursement costing rather than the full resources used for treatment. Model [2] of Table 2 assumes the social CBA uses the estimates of ED visits and hospitalizations based on the CHAP-eligible population rather than actual CHAP clients. In this case, the benefits would be \$272,300 and the benefit-cost ratio falls to 0.49. Finally, Model [3] includes the expenditures of PH as a cost. In this case the benefits are 0.8 times the costs.

As noted above, the baseline model in Table 1 does not count the value of health to the family (not only psychological costs, but pain and suffering and medical expenditures). It assumes that there will be no avoidance of unnecessary ED visits and hospitalizations beyond the first year. Plus, when the PH costs are included (as in Model [3] of Table 2), it is also necessary to value the medical care that doctors provide. This is almost certainly more than simply avoiding an ED visit or hospital stay.

Table 3 shows how the social benefit-cost results are affected by these alternative assumptions. If the value of health to the family is included, the total benefits rise to \$908,090 and the benefits exceed the costs by a factor of 1.64. If the impact of CHAP lasts two years, then the benefits increase considerably and the benefit-cost ratio rises to 2.37. Finally, as shown in Model [3] of Table 3, if the PH expenditures are included alongside the anticipated benefits of care by doctors, the benefit-cost ratio is 1.03. Thus, under plausible upward assumptions, the CHAP program yields benefits that certainly exceed its costs.

Table 3
The Economic Costs and Benefits of CHAP
Upward Sensitivity Tests

	[1] Including value of health to family	[2] Two-year impact of CHAP	[3] Including benefit of doctor care
Benefits of CHAP [B]:			
Fewer ED visits	\$261,640	\$516,730	\$261,640
Fewer hospitalizations	\$345,000	\$681,380	\$345,000
More school days	\$58,800	\$116,130	\$58,800
Health to family	\$242,650	-	-
Doctor care	-	-	\$195,690
<i>Total</i>	<i>\$908,090</i>	<i>\$1,314,240</i>	<i>\$861,130</i>
Program delivery cost [C]	\$554,070	\$554,070	\$833,620
Net saving [B - C]	\$354,020	\$760,170	\$27,510
Benefit-Cost ratio [B/C]	1.64	2.37	1.03

Notes: Savings are in 2011 dollars to nearest \$10. Second year impact discounted at 3.5%.

As a final check, we look at the fiscal CBA using the estimates of the reduction in ED visits (781) and hospitalizations (100). In this case, the savings would be \$428,540 and would exceed PH expenses by \$148,990. Alternatively put, the benefits would be 1.52 times greater than the costs. In that case, CHAP would pass a fiscal CBA test.

CBA Conclusions

The economic analysis of CHAP yields several conclusions and considerations for future research.

First, after 2 years, the demonstration project shows promise. Given the large fiscal and social costs of ill health, effective programs are likely to yield high pay-offs. This is true now, and it is likely to be even more salient in future decades.

Second, the social benefit-cost analysis is positive. The baseline model yields a benefit-cost ratio of 1.2 and if we take the simple average of the downward and upward sensitivity tests, the social benefit-cost ratio of CHAP is 1.21. A summary conclusion would therefore be that the benefits exceed the costs by one-fifth.

Finally, these results suggest that the economics of CHAP would be even stronger if more was known about how much patients value CHAP and how highest risk (highest cost) patients might best be served.

3.6 Partnerships (Community Support)

Question

Has CHAP forged partnerships in the community to support its goals?

Context

Expanded partnerships enable CHAP to achieve its goals and objectives. Not only is the number of partners across the community an important indicator of partnership development but so, too, is the level of collaboration with each partner. The two indicators associated with partnerships were evaluated in section 3.1, as they are closely tied to access - number of sites offering Medicaid-based primary care and the percent of private practices associated with CHAP.

Findings To recap, there was a slight increase in the number of private practices associated with CHAP from 11 to 14 over the past two program year, with GVSU added in 2009 and Baxter and the DeVos Adolescent Medicine Clinic in 2010. Three key partnerships for CHAP include:

Asthma Network of West Michigan (ANWM) – ANWM’s educators and social workers provide services and content expertise about asthma to CHAP. This partnership has resulted in increased in-service education at partnering practices, as well as providing training for CHAP staff.

Helen DeVos Children’s Hospital – in 2010 CHAP developed a new linkage between CHAP/ANWM and the Helen DeVos Children’s Hospital inpatient unit - as a result all inpatient asthma admissions will be referred to CHAP/ANWM in the future.

Priority Health - Priority Health provided financial incentives to primary care medical homes to encourage them to enhance access for high-risk patients and families in participating practices.

Though specific levels of collaboration were not quantifiable, in 2010 CHAP conducted collaborative efforts with many other community partners including:

- Health Plan of MI
- Great Lakes Health Plan
- MOMS Program
- Breton Health Center
- Parents (through Parent Advisory Group)
- Child and Family Resource Council
- Behavioral Health agencies, including Arbor Circle, Family Outreach, and Network 180

3.7 Asthma Control & Management (Integration)

Question Has CHAP engaged in activities to support continuum-based care for asthma control and management in Kent County?

Context CHAP partners with the Asthma Network of West Michigan (ANWM) to build continuum-based care for Kent County’s Pediatric Asthma Program. Six domains have been identified as key links to establishing standardization of asthma care – school, home-based services, medical home, inpatient/emergency department, health plans, and community/neighborhood. As CHAP’s asthma initiative continues, these domains will be the focus of efforts to build continuum-based care for Kent County’s Pediatric Asthma Program. In 2010, indicators for systems-level outcomes are linked to asthma profiles conducted at partnering CHAP practices and anecdotal system-wide activities in asthma management.

Findings Changes on practices’ (n=8) asthma practice profiles⁵ from 2009 to 2010 show success in efforts to improve continuum-based care with medical homes (partnering practices).

- **Increased in-service trainings:** At pre-assessment, 12.5% (1 of 8) of partnering practices had participated in a CHAP/ANWM asthma in-service within the past year. At post-assessment, 87.5%, (7 of 8) had participated in a CHAP/ANWM asthma in-service within the past year.

⁵ “Pre” conducted in early 2009; “Post” conducted in December 2010 and January 2011. These assessments were self-report surveys.

- **Increased spirometry:** At pre-assessment, 25% of partnering practices performed spirometry. At post-assessment, 62.5% performed spirometry.
 - **Increased asthma action plans (AAPs):** At pre-assessment, 25% of partnering practices provided AAPs to all asthma patients. At post-assessment, 100% reported providing AAPs to all asthma patients. *Of note: Post-assessment, 6 of 8 practices use a standardized AAP (developed by HDVCH).
 - **Increased referrals to CHAP/ANWM:** At pre-assessment, 37.5% of partnering practices regularly referred to CHAP/ANWM. At post-assessment, 100% of partnering practices regularly referred to CHAP/ANWM.
- Developed new linkages with Helen DeVos Children’s Hospital inpatient unit - as a result all inpatient asthma admissions, regardless of insurance status, will be referred to CHAP/ANWM in the future.
 - In practice-level key informant interviews, the asthma trainings provided by CHAP/ANWM were cited as “valuable services”.
 - CHAP’s asthma case management model was revised in the fourth quarter of 2010 and additional staff were added, including .5 FTE social worker and .6 FTE asthma educator. In addition, community health workers joined the asthma team.

3.8 Behavioral Health, Dental, Obesity & Nutrition (Integration and Community Support)

Question What has CHAP done to initiate system-wide changes in Behavioral Health, Dental Health and Obesity/Nutrition for children in Kent County?

Context CHAP has identified three system-level changes that it would like to affect in the areas of Behavioral Health, Dental Health and Obesity/Nutrition. Although each of these systems level activities has the potential to incubate a related evidence-based initiative (similar to the asthma or otitis media initiatives), this evaluation question addresses the activities CHAP engages in at the system level such as identifying partners, convening stakeholders, initiating work groups, and raising community awareness.

Findings The main indicators of system-level changes are derived from anecdotal information on changes in Behavioral Health, Dental Health and Obesity/Nutrition that have resulted from CHAP involvement. Dental Health was not evaluated due to lack of activity on this initiative during 2010.

- CHAP hired a social worker in the fourth quarter of 2010 to increase behavioral health capacity and provide care coordination/navigation of the behavioral health system for families. In addition, the BH Workgroup was active during 2010, meeting 4 times.
- Fit Kids 360 is a seven-week program for overweight children that gives parents and children a positive, safe approach to healthy living. The program is designed to prevent and treat obesity and serve as an educational resource for parents and children. Outcomes of Fit Kids 360 (met 9 times in 2010) included:
 - The pilot phase of the program was launched on September 30, 2010, and was supported by CHAP through funding and staff time.
 - In 2010, Fit Kids360 was attended by 34 children, of which 11 were CHAP clients.

3.9 Expansion

Question Has the CHAP model led to expansion in 1) health plans 2) all Medicaid eligible children in Kent County or 3) other counties in Michigan and across the country?

Context As the benefits of CHAP are demonstrated through outcomes, a program goal is to expand the reach of Kent CHAP's model to include additional health plans, serve more children and help to replicate additional programs at the state and national levels. While efforts were made in 2010 toward expansion in health plans and serving more children, those outcomes are longer-term in nature and will be evaluated in 2011.

Findings CHAP did successfully support other Michigan counties in their efforts to adopt the Kent CHAP model, including:

- Providing information and guidance to Wayne CHAP, Shiawassee CHAP, and Kalamazoo CHAP which moved these counties closer to developing their own CHAP programs. Detailed knowledge learned from Kent CHAP supported Wayne CHAP's program development efforts. Subsequently Wayne CHAP received significant funding from the Kresge Foundation for implementation.
- Creating and distributing the CHAP Toolkit. Requests for information from networking activities led to development of the toolkit, funded by ECIC, that serves as a CHAP implementation blueprint for use by other communities
- Attending and presenting at 18 events/meetings in 2010 that focused on program expansion in the state of Michigan and nationally for the Pediatric Medical Home model. Highlights of these 2010 activities included:
 - In March, presented Kent CHAP at national Patient Centered Primary Care Collaborative National Meeting in Washington DC. The CHAP medical director and program manager networked with others interested in medical home around the country.
 - Throughout 2010, met with representatives from many other Michigan counties interested in the Kent CHAP model and provided them information about CHAP implementation. Other counties touched included Ottawa, Kalamazoo, Wayne, Shiawassee

3.10 System-level Outcomes Summary

Several developments occurred in 2010 as a result of collaborative efforts led by CHAP to create efficient delivery of services, including:

- Collaboration with the Helen DeVos Pediatric ED to implement new referral protocol to CHAP
- Developed new linkage between CHAP/ANWM and Helen DeVos Children's Hospital inpatient unit, as a result, all inpatient asthma admissions will be referred to CHAP/ANWM

CHAP achieved the majority of objectives set for supporting continuum-based care for asthma control and management, including increased in-service training, increased spirometry, increased asthma action plans (AAPs) and increased referrals to CHAP/ANWM.

Additionally, CHAP provided information and guidance to Wayne CHAP, Shiawassee CHAP, and Kalamazoo CHAP which moved these counties closer to developing their own CHAP program. The detailed knowledge learned from Kent CHAP supported Wayne CHAP's program development efforts and subsequently Wayne CHAP received significant funding from the Kresge Foundation for implementation.



At the system-level, current findings indicate practice-level rates for both ED/IP use are decreasing, as are CHAP client ED and IP rates. Promisingly, rates for CHAP client use appear to show a sharper decrease in use over time. Further analyses are needed for claims data that will help clarify the connection between CHAP services and trends in ED/IP rates, including analysis by diagnostic reasons and identifying a comparison group.

4 Healthcare Partners Level Evaluation

At the healthcare partner level, CHAP strives to connect health care providers to resources and mobilize family-centered, continuous, comprehensive, coordinated, compassionate and culturally effective medical homes. Based on the goals and activities that comprise the *healthcare partner-level* of the CHAP program (Figure 1), SRA developed the evaluation questions examined in this section.

4.1 Provider Education on Asthma

Question Has CHAP increased provider knowledge of Asthma Control and Management?

Context One of CHAP’s objectives with the Asthma Initiative is to increase provider knowledge of current treatment and management of asthma in children. This is evaluated by tracking process measures of educational efforts as well as collecting self-reports of how providers have changed their asthma care due to these efforts.

- Findings**
- Increased in-service Trainings: At pre-assessment, 12.5% (1 of 8) of partnering practices had participated in a CHAP/ANWM asthma in-service within the past year. At post-assessment, 87.5%, (7 of 8) had participated in a CHAP/ANWM asthma in-service within the past year.
 - Asthma education and knowledge sharing occurred during practice manager meetings (8 in 2010) and provider meetings (2 in 2010).

4.2 Fidelity to Models

Question Have partners implemented CHAP’s Asthma Control and Management and Otitis Media Initiatives according to program specifications (i.e., fidelity)?

Context Program fidelity elements for the Asthma Control and Management (ACM) Initiative are presented in Table 2, while program fidelity for the Otitis Media Initiative is presented in Table 3.

- Findings**
- Findings were positive for partner implementation of ACM according to program specifications. Table 2 provides summary findings for outcomes of ACM program fidelity.

Table 2. Outcome of Program Fidelity

Elements of program fidelity for Asthma Control and Management Initiative	
<input checked="" type="checkbox"/>	Completed asthma in-services for providers and staff within last 18 months
<input checked="" type="checkbox"/>	Provide asthma education for patients
<input checked="" type="checkbox"/>	Practice performs spirometry
<input checked="" type="checkbox"/>	Consistent provision of an Asthma Action Plan
<input checked="" type="checkbox"/>	Teach patients peak flow monitoring
<input checked="" type="checkbox"/>	Have a standardized approach to assessing environmental tobacco smoke
<input checked="" type="checkbox"/>	Conducts a routine 6-month follow-up visit
<input checked="" type="checkbox"/>	Maintain a registry of patients with asthma
<input checked="" type="checkbox"/>	Utilization of the Asthma Control Test

Changes on practice asthma practice profiles (n=8) from 2009 to 2010 show success in efforts to improve continuum-based care with medical homes/specialists (partnering practices). There were increases from 2009 to 2010 in asthma in-service trainings (up 75%), in spirometry performed (up 37.5%), in asthma actions plans provided to patients (up 75%), and in-office asthma education provided to patients (up 25%) (see section 3.7 for more details).

Elements that scored high at pre were “teach patients peak flow monitoring” and “have a standardized approach to assessing environmental tobacco smoke, and “conducts a routine 6-month follow-up visit”. Practices consistently had the same high scores on both of these elements at post.

From the asthma profile results, CHAP program staff have identified the following areas to work on going forward:

- Use of asthma control test (change from pre-post was 12.5% to 37.5%)
- Establishing an asthma registry
- Continued in-servicing for staff and providers

✓ As shown in Figure 4. Changes on asthma practice profiles from 2009 to 2010 show success in efforts to improve continuum-based care with partnering practices.

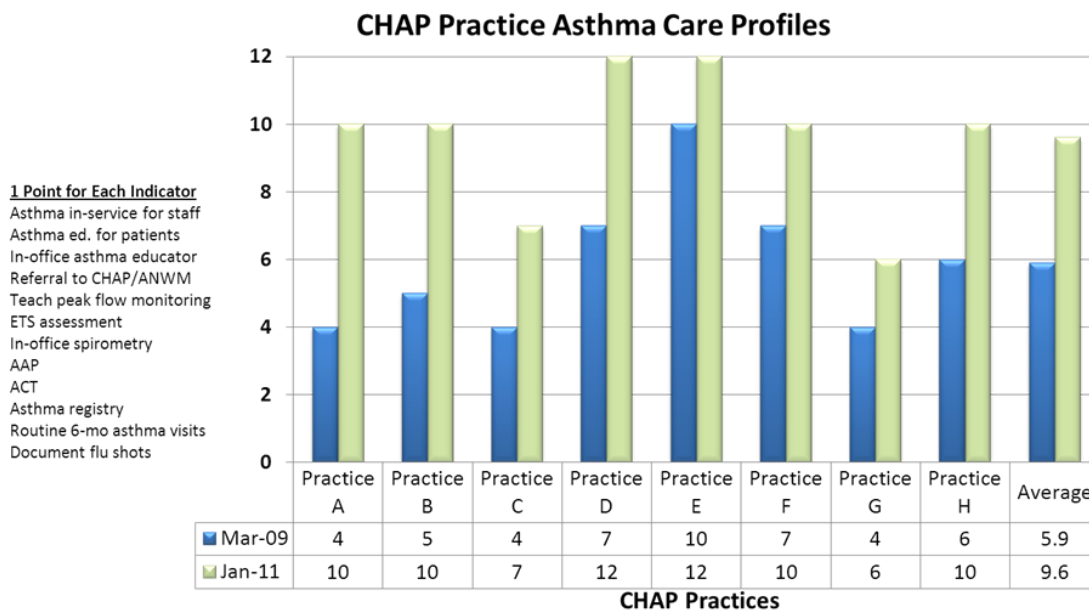


Figure 4

Findings were positive for partner implementation of the Otitis Media Initiative according to program specifications. Table 3 provides summary findings for outcomes of Otitis Media program fidelity.

Table 3. Outcome of Program Fidelity

Elements of program fidelity for Otitis Media Initiative	
✓	Policy for conducting Otitis Media Education (flipchart or DVD)
✓	Policy for prescribing AB otic prescription at 9 or 12 month visit
✗	Reinforce education at subsequent visits

In April 2010, CHAP surveyed practices participating in the Otitis Media initiative to determine their fidelity to implementation. In total, 9 practices completed surveys.

- The outcome for conducting Otitis Media Education was achieved, as 8 out of 9 practices reported they used either the DVD (6), flipchart (1), or both (1) to provide education.
- The outcome for prescribing AB otic prescriptions was achieved, as all practices indicated they provide the prescription, though there was variance at which visit the

- prescription is provided – most reported providing at the 9-month visit, while one practice did so at the 4 month visit and another at the 6 month visit.
- Survey data was not collected for whether practices are reinforcing OM education at subsequent visits, thus this outcome could not be evaluated.

Question 4.3 Partner Feedback

What feedback do health care partners provide on CHAP services?

Context As a measure of community support, regular feedback from stakeholders, partners and providers on their experiences with CHAP services is collected. Favorable feedback implies strong community support while less favorable feedback could provide areas for improvement for CHAP. Indicators for this question include levels of stakeholder, partner and provider satisfaction with CHAP.

Findings CHAP has provided tangible benefits through resources and referrals. Healthcare partners reported they had hired additional staff members and feel empowered to participate in CHAP initiatives. For these practices, CHAP is viewed as a valuable resource that helps to improve the practice.

Practice managers and providers reported the quarterly provider meetings were helpful because they:

- were able to meet and connect with other professionals.
- liked hearing what other practices are doing.
- liked meeting colleagues working through some of the same practice issues.

Practice managers and providers reported they believe others in their practices viewed CHAP in both positive and negative ways. Some participants reported that CHAP has helped them to improve their practice (as described above), while others have more neutral feelings.

- One practice manager reported CHAP was initially intimidating because the practice was not very large
- Another discussed her confusion about acquiring new patients.
- Some participants complained about having to do extra paperwork that was viewed as not helpful or efficient for their practice.

Providers, practice managers, and staff all mentioned that CHAP helps to reach the patients when the practice has trouble reaching them regarding appointments. Additionally, practices liked that CHAP staff visit patient homes to provide education to the families regarding emergency room use or how to use their medications.

Transportation was mentioned the most as one of the services that were thought to be the most valuable to the patients. Other valuable services included following up after services, referrals to community resources, asthma information, education, and general support. Practice managers and providers thought that following up and discovering barriers was valuable because it is a service they do not have the resources to provide.

Frequently mentioned valuable services included asthma services, trainings, care coordination, and providing a forum for collaboration.

During 2010, education and knowledge sharing occurred during practice manager meetings. Collaborative education and presentations on various health topics/initiatives occurring regionally included:

- Priority Health representatives attend program meetings (practice manager, provider, CHAP advisory and most workgroups) and provide program updates

- Child and Family Resource Council discussed the Connections Program, and the importance of developmental screening
- Healthy Kent 2010 presentation by the Kent County Health Department
- Practices shared their practice-specific medical home materials
- CHAP announced partnerships with libraries - providing calendars for Literacy and Early Learning, along with copies of the monthly books for CHAP practice waiting rooms.
- Healthy Homes Coalition presented services for pest management, lead abatement, other home-based services, and to talk about partnership with CHAP asthma initiative

Also during 2010, CHAP provided information on CHAP services, referrals and medical home best practices, as well as information exchange with partnering practices. These meetings served to facilitate collaborative relationships with organizations. CHAP held the following meetings in 2010 with partnering practices:

- Westside Health Center staff meeting (5)
- Cherry Street workgroup (5)
- DeVos Pediatric Clinic workgroup (11)
- Booth Clinic staff meeting (1)
- Baxter Health Center staff meeting (2)
- ABC Peds staff meeting (1)
- GVSU staff meeting (2)
- Kent Peds staff meeting (1)
- DeVos Adolescent Medicine Clinic staff meeting (2)
- DeVos Pediatric Clinic all-staff meeting (1)
- Priority Health workgroup (9)

4.4 Pediatric Leadership Development

Question Has CHAP supported the development of Pediatric Leadership across Kent County?

Context An integral function of CHAP is to build and sustain leadership within the pediatric health care community. As providers begin to take ownership of the causes championed by CHAP, the program takes the next step towards embedding CHAP principles into the community for a greater chance of long term sustainability.

- Findings**
- During 2010, “lead” pediatricians provided updates on workgroup activities at provider meetings and were part of the agenda as presenters, rather than just attendees.
 - The CHAP program manager anecdotally reported there was a sense of ownership of CHAP overall, and specific projects in particular, based on areas of interest.
 - The otitis media project was brought to CHAP by a CHAP pediatrician, Sue Wakefield.
 - Some of the CHAP pediatricians became more involved in community-based efforts. For example:
 - o Bill Stratbucker (HDVCH) participated in the early childhood indicators workgroup for health last summer.
 - o Karen Vanderlaan (HDVCH), Sue Wakefield (Forest Hills), and Jeff Hoogstra (ABC Peds) were involved in the asthma initiative
 - o Candace Smith-King (HDVCH), Kristin Stout and Jenny Bush (Westside Health Center) were involved in the behavioral health initiative.

- Kathy Howard (Forest Hills) took a leadership role in the Childhood Obesity/Fit Kids 360 project.

4.5 Healthcare Partners Outcomes Summary

Practices improved their averages on the asthma practice profile scores from 5.9 in 2009 to 9.6 in 2010, demonstrating an increase in provider knowledge and fidelity to the ACM program model. Additionally, fidelity to the Otitis Media (OM) program was demonstrated by 8 out of 9 practices using the OM educational materials and all practices indicating they prescribe AB otic prescriptions.

Healthcare partners viewed CHAP as a valuable resource, with transportation being the most valuable service.

5 Children and Family-Level Evaluation

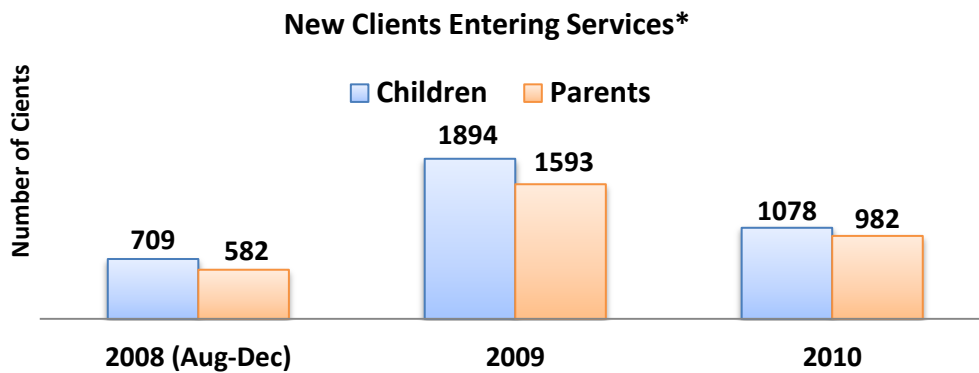
Since program inception, 3681 children have been referred to CHAP services. Section 5.1 describes the target population served, while 5.2 and 5.3 evaluate outcomes for services and initiatives.

5.1 Target Population

Question Given expanded services (i.e., initiatives and projects), has CHAP served its target population?

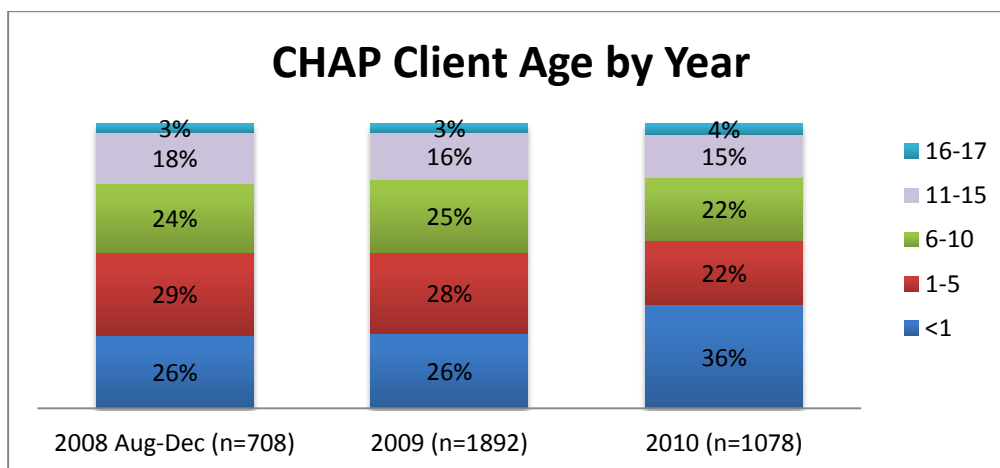
Context CHAP was designed to serve children 0-17 receiving Medicaid at partnering healthcare sites. During the demonstration project, (Aug 2008 – Dec 2011), eligibility was restricted to those children on Priority Health Medicaid and at selected practices. Approximately 14,600 were eligible for CHAP under this system during 2009 and 2010. Children can be served across years, for example, a child entering services on December 15, 2009 would be counted as a new client in 2009, but could receive services throughout 2010. Demographics for CHAP clients were analyzed according to their date of program entry. It should be noted that the program began in August 2008, hence 2008 is only reflective of 5 months.

Findings As shown in Figure 5, CHAP has served 3681 unique children since program inception through December 2010 and, as shown in Figure 6, children served were aged 0-17.



* the unique number of new clients by year based on their first date of referral.

Figure 5



*missing = 1 in 2008; 2 in 2009

Figure 6

As shown in Figure 6, across years, the percentage of children ages 1-5 entering services dropped 6% between 2009 and 2010, while the percentage of children less than 1 year old

entering services increased 10%. This may be partially due to most CHAP practices limiting new members to newborns during 2010. Figure 7 provides the averages of client age for all program years.

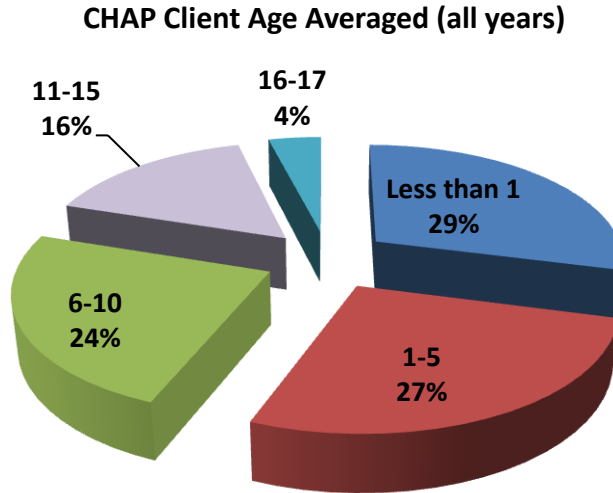


Figure 7

Question Who is CHAP serving?

Context It is important to understand other socio-demographic characteristics of CHAP clients served so that CHAP can develop strategies for outreach and tailor services in order to meet their client population’s needs. Other data collected by CHAP related to client characteristics includes child race, language, and gender.

Findings Race: It is difficult to draw conclusions about CHAP client race (Figure 8) due to the high percentage of clients that did not report their race in 2010.

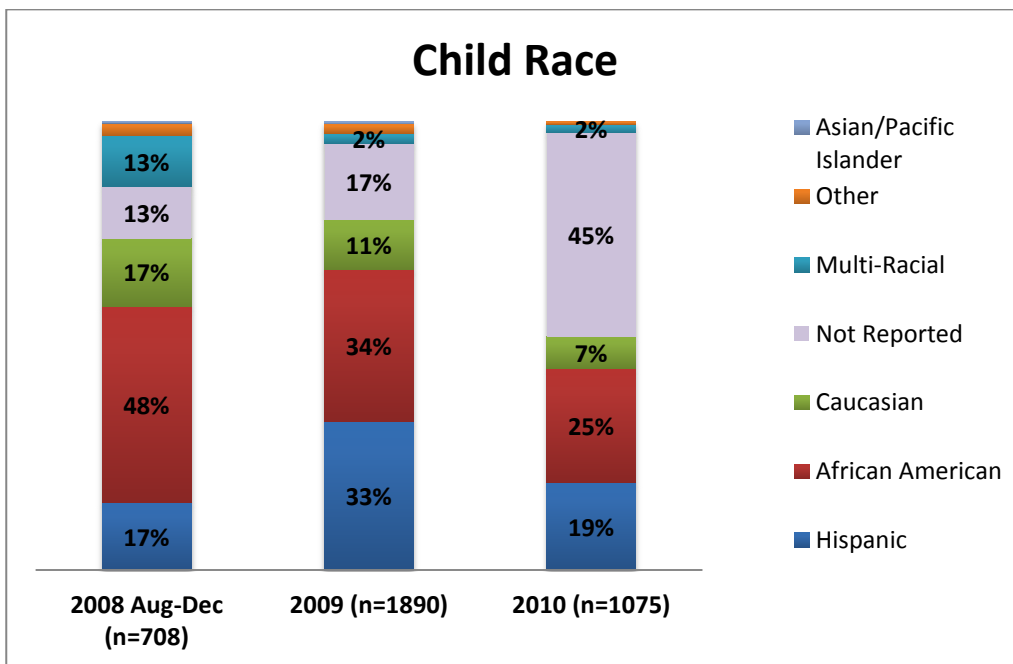


Figure 8

It should be noted, CHAP has limited opportunity to inquire about race with some clients while providing some services and, additionally, some parents decline to report their child’s race.

Figure 9 provides the averages of client race for all program years.

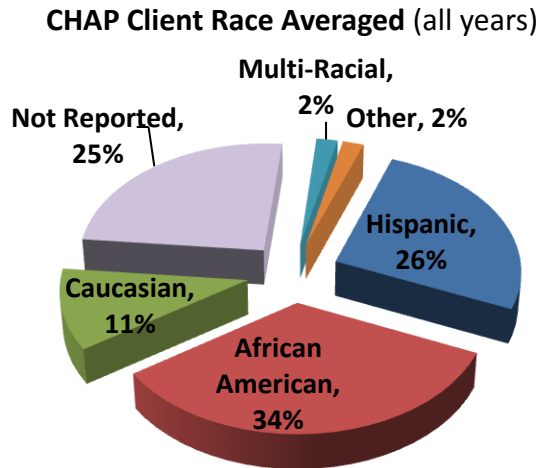


Figure 9

The program can consider ways to improve data collection of child race in the future. It is also possible that as children interact more with the program that the “not reported” data for children entering services in 2010 will improve (i.e. this speaks mainly to a data lag issue).

Parent Language: There is virtually no differentiation in language data by year, thus only averages for parent language overall is presented.

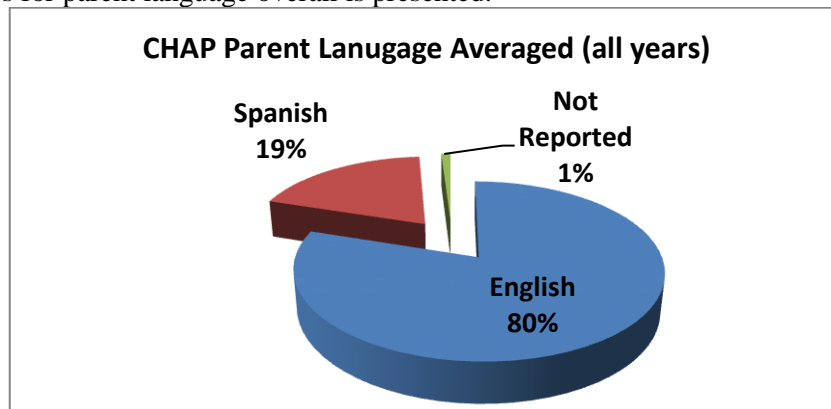


Figure 10

English was the predominant language spoken by parents of children in services (80%), with 19% speaking Spanish, while 1% reported “Other”.

Child Gender

The distribution of gender of the children served remained consistent across all program years, as shown in Table 4.

Table 4. CHAP Child Gender by Year and Overall

Gender	2008 (n=709)		2009 (n=1894)		2010 (n=1078)		Overall (n=3681)	
	n	%	n	%	n	%	n	%
Female	353	50%	929	49%	502	47%	1784	48%
Male	356	50%	965	51%	576	53%	1897	52%

5.2 Services & Referrals

Question How many clients were referred to CHAP? Of those, how many received services?

Context Clients may be referred for multiple reasons to CHAP and may receive multiple services. CHAP has not established specific quantifiable goals for clients served, hence findings in this section are not characterized by outcome symbols.

Findings Overall, 5834 unique children were referred to CHAP from August 2008 through December 2010. The total number of referrals for children during this timeframe was 9909, including:

- 2008 = 1831
- 2009 = 5741
- 2010 = 2337

63% of children referred to CHAP actually received a tangible service from the program (calculated as the percentage of children served vs. referred overall using the unique numbers of both groups, i.e. 3681/5834). Thirty-seven percent of children referred to CHAP did not receive services, due to various reasons including refusal of services, inability to contact and contact by mail only.

It is important to note that children receiving services can be served across multiple evaluation timeframes. For example, a child may enter services in November 2009 and receive services through March 2010. For this reason, we have also provided the context of looking at children non-uniquely for service provision in Table 5.

Table 5. Service Provision (non-unique across years)

<i>Year</i>	<i># Children Attempted to Serve*</i>	<i># Children Served including CHAP mailings</i>	<i># Children Served without CHAP mailings</i>
2009	3594	2810	2366
2010	2835	2275	2053
Total	6429	5085	4419

*includes any 2008 client CHAP attempted to serve in 2009

From the evaluator’s perspective, the number of children served without CHAP mailings comes closest to the true number of children touched by CHAP services each year.

Question Who referred clients to CHAP?

Context Clients can be referred to CHAP by partnering practices, community partners (such as Priority Health and the Asthma Network of West Michigan) and they can self-refer. As 2008 was an abbreviated timeframe, referral reasons were evaluated for only full program years 2009 and 2010.

Findings As shown in Table 6, the majority of referrals to the program across both years were either self-referrals or practice A and B (clients can be referred to CHAP multiple times for different reasons).

The referral patterns from practices seem to follow the trend of the most number of referrals coming from the partnering practices that have the highest number of patients. Practices A, B, and C are three of four largest providers that serve Priority Health Medicaid-eligible children in the county.

Table 6. Number of Referrals by Referral Source (non-unique)

<i>Referral Source</i>	<i>2009</i>		<i>2010</i>		<i>2 Year Total*</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Practice A	1156	20%	772	34%	1928	27%
Practice B	1526	27%	236	10%	1762	19%
Self	947	17%	401	18%	1348	18%
Practice C	1102	20%	280	12%	1382	16%
Practice D	404	7%	241	11%	645	9%
Practice E	117	2%	179	8%	296	5%
Practice F	187	3%	28	1%	215	2%
Practice G	91	2%	15	1%	106	2%
Practice H	28	0%	14	1%	42	1%
Practice I	41	1%	67	3%	108	2%
Practice J	0	0%	20	1%	20	1%
Practice K	29	1%	8	0%	37	1%
Practice L	17	0%	4	0%	21	0%
Total	5645	100%	2265	100%	7910	100%

*Sources with total n<20 total were not included

Question Why were clients referred to CHAP?

Context Children can be referred to CHAP services multiple times for multiple reasons.

Findings As shown in Table 7, there was variation across years for reasons for referral, with more referrals in 2010 for Frequent No Shows than in 2009, an increase in transportation requests in 2010, and fewer referrals for new patients in 2010.

Table 7. Reasons for Referrals to CHAP (non-unique)

<i>Reasons</i>	<i>2009</i>		<i>2010</i>		<i>2 Year Total</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Repeat Use ED	1461	23%	1099	25%	2560	24%
Frequent No Shows	1211	19%	1258	29%	2469	23%
Needs Transportation	809	13%	960	22%	1769	17%
New Patient	1336	21%	390	9%	1726	16%
Delinquent Well Child Exams	618	10%	259	6%	877	8%
Plan For Asthma	339	5%	111	3%	450	4%
Social Resource	271	4%	81	2%	352	3%
Delinquent Immunizations	173	3%	129	3%	302	3%
Behavioral Health	127	2%	60	1%	187	2%
Total	6345	100%	4347	100%	10692	100%

Question What services were provided to clients?

Context As 2008 was an abbreviated timeframe, services evaluated in this report cover only full program years 2009 and 2010. Services provided by CHAP include transportation, ongoing education, home visits, asthma disease management, and connection to community resources.

Findings Service data are presented in Table 8 for all efforts CHAP makes, including successful and unsuccessful attempts at service.

Table 8. Services Provided to Unique Children by Year

<i>Services Type</i>	<i>Non-Unique Services Provided</i>		<i>Unique Children</i>		<i>Average # Per Child</i>	
	2009	2010	2009	2010	2009	2010
Asthma Social Worker home visit completed	52	102	21	50	2.5	2.0
Asthma educator home visit completed	526	385	160	131	3.3	2.9
Asthma care conference	32	52	28	42	1.1	1.2
MSW CHAP home visit	0	24	0	11	NA	2.2
MSW CHAP phone consult	0	17	0	9	NA	1.9
Home visit completed	340	329	331	300	1.0	1.1
Interpretation	24	42	22	32	1.1	1.3
Telephone consultation	1823	1732	1516	1360	1.2	1.3
Follow-up	1054	548	808	384	1.3	1.4
Letter Mailed	1694	1010	1580	955	1.1	1.1
CHAP materials mailed	1343	814	1287	770	1.0	1.1
Transportation	696	1026	316	437	2.2	2.3
Follow-up on transportation	161	149	138	125	1.2	1.2
Asthma home visit unsuccessful	33	6	29	6	1.1	1.0
Home visit unsuccessful	779	754	666	676	1.2	1.1
Unsuccessful call	2736	2196	1850	1521	1.5	1.4
Case Closed No Contact	379	694	367	646	1.0	1.1

Excluding the non-successful efforts (Table 9, shown in red), CHAP provided 7990 services to its clients in 2009, with telephone and mailing activities comprising 73% of program efforts. Comparably, in 2010, CHAP provided 6280 services to its clients, with telephone and mailing activities comprising 65% of program efforts. As such, it appears CHAP is increasing the number of tangible services provided to clients.

Across both years, CHAP has provided 1065 asthma disease management services, 693 non-asthma home visits, 3555 phone consultations, and 1722 transportation services.

Transportation

As needed, CHAP pays for and arranges transportation via a taxi for patients who require a same-day or next-day acute care visit.

- In 2009, a total of 316 clients made 696 transportation requests, averaging 2 requests per client (range 1-13).
- In 2010, a total of 437 clients made 1026 transportation requests, averaging 2 requests per client (range 1-16).

While the average number of requests per client was 2, the distribution of requests per client by year (Figure 11) shows approximately half of CHAP’s clients (55% 2009; 51% 2010) used transportation once, while 30% for both years used transportation services 3 times or more.

Number of Transportation Requests per Client

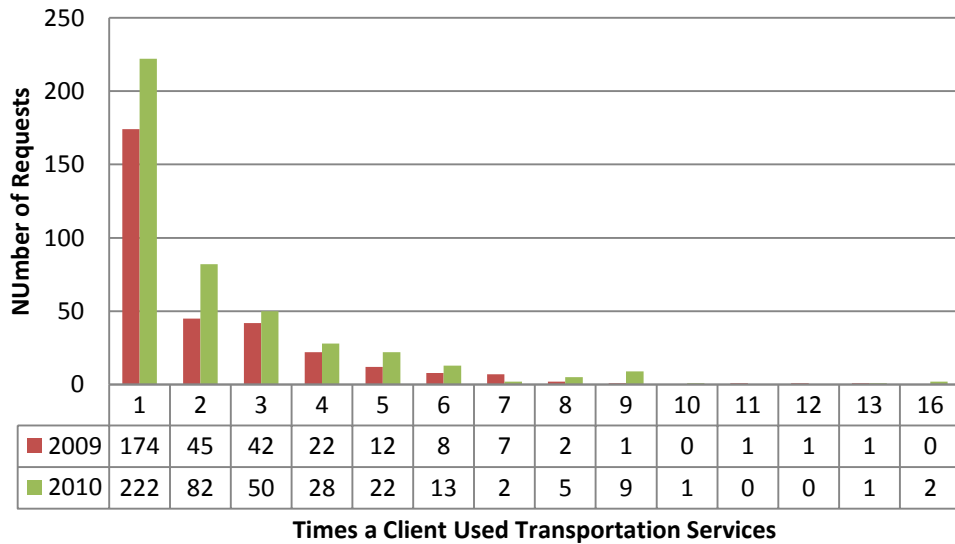


Figure 11

As in 2009, the majority of 2010 requests were for transportation to DeVos Pediatrics (Table 9).

Table 9. Transportation Destinations

<i>Destination</i>	<i>2009 (n=692)</i>	<i>2010 (n=1020)</i>
DeVos	60%	54%
Other	13%	11%
Grand Rapids	9%	10%
Cherry St	7%	6%
Westside	4%	6%
Baxter Health Clinic	0%	3%
Booth	2%	2%
Alger	2%	2%
GRAPES*	1%	2%
GVSU Family Health Center	0%	2%
Forest Hills	1%	1%
Kent	1%	0%

*Grand Rapids Area Pediatric Evening Service: an after hours urgent care clinic that a number of local offices use as a referral source for evening and weekend care.

It is important to consider the increasing transportation services effect on CHAP costs. In 2009, the approximate transportation cost was \$17,000 for 696 transportation events. In 2010, the number of events increased 30% to 1026 and transportation costs increased to \$27,151.

Ongoing Education

Once a child is referred to CHAP, an assigned CHAP team member calls the family to discuss its needs. In general, the team member asks about the child's current health status, reviews current preventive health needs (such as well-child visits or immunizations), emphasizes that providers may be contacted 24 hours a day in lieu of going to the ED, and discusses how to access the provider when needed. The frequency of ongoing contact varies with family need; some families receive only one call, while others communicate regularly with the CHAP team member.

Following the initial call, the CHAP team member mails written materials that describe CHAP services, emphasize the value of the medical home, provide contact information for the child's doctor/clinic, and outline circumstances under which the provider (rather than the ED) should be visited. If the team member cannot contact the family by telephone, he/she will drop by the home to provide face-to-face education and printed materials (aka a home visit).

As noted in Table 8, CHAP staff conducted 1823 phone consultations in 2009 and 1732 in 2010. Educational materials mailed to clients included 1343 in 2009 and 814 in 2010. The percentage of total CHAP clients receiving home visits increased slightly from 2009 to 2010. These home visits are made by members of the CHAP team (community health workers, nurse, social worker) and do not include asthma home visits. In 2009, CHAP staff completed 340 home visits for 331 unique children, an average of 1 visit per child.

- Of the 2366 children served in 2009, CHAP attempted to conduct 1252 home visits for 1039 clients (44% of children served)
- Of the 1252 attempts to conduct a home visit, 340 (33%) were completed successfully

In 2010, CHAP staff completed 329 home visits for 300 unique children, an average of 1 per child.

- Of the 2053 children served in 2010, CHAP attempted to conduct home visits for 936 clients (46% of children served)
- Of the 936 attempts to conduct a home visit, 329 (35%) were completed successfully

It should be noted that the majority of CHAP non-asthma program visits are "stop-bys", meaning that staff visit someone's house because they have not been able to get in touch with them by phone or mailing efforts.

Asthma Home Visits

CHAP partners with the Asthma Network of West Michigan to deliver the home-based case management services for children with asthma. An asthma educator and social worker provide ongoing, home-based asthma care management and education. Services include medication management and education on various asthma-related topics, including elimination of asthma triggers, inhaler use, the importance of regular medical home visits, and appropriate asthma care. The asthma educator assists the patient in requesting an asthma action plan (AAP) if they do not have one and reviews multiple times during asthma home visits. The AAP outlines treatment/medications, asthma triggers, how to handle an attack, and when to call the doctor or go to the ED. The social worker works with the family's landlord to address mold, mildew, and pest control issues and refers parents for behavioral health services if psychosocial issues prevent an adequate focus on the child's health. CHAP community health workers are part of the asthma care management team, providing social support, connection to community resources, and reinforcement of the education delivered by the certified asthma educators.

The average number of asthma home visits increased from 2009 to 2010. The number of unique CHAP clients that received asthma services was 154 in 2009 and 93 in 2010 (children may be duplicated across years as they can receive services in more than one year).

- In 2009, CHAP staff completed 578 home visits for 154 unique children, an average of 3.7 visits per child.⁶
- In 2010, CHAP staff completed 487 home visits for 93 unique children, an average of 5.2 visits per child.⁷

Question What referrals to community services did CHAP make?

Context As clients receive services from CHAP, additional needs may be identified. CHAP directs clients to other community resources as needed.

Findings In 2009, CHAP clients were referred 160 times to additional community resources, with the majority of those referrals going to ANWM (64%), transportation (20%), the United Way (6%), behavioral health (4%), and other (6%).

In 2010, CHAP clients were referred to 91 times to additional community resources, with the majority of those referrals going to ANWM (55%), shelter/housing resources (15%), behavioral health (11%), food (3%) and other (16%).

It is important to note that the data collected in the CHAP database may not accurately reflect the referrals made to community resources. Efforts to improve data collection for the 2011 evaluation are being implemented by the program through a more comprehensive CQI process.

Question Were the services relevant, well-implemented, and useful?

Context CHAP services are designed to increase access for children to medical care and link families to resources in the community. Delivery of well-implemented, relevant services that clients perceive as useful is an important measure of program success. In 2010, this was evaluated through focus groups that provided feedback on CHAP services and targeted parents of CHAP's asthma services.

Findings Focus groups conducted with CHAP asthma clients provided insight into ways CHAP services are useful. Overall, client feedback from the focus groups on CHAP asthma services was very positive.

- Clients reported highly favorable opinions of the CHAP asthma educators, their interactions with them, and the positive impact their education and assistance has had on their child's health.
- Clients reported asthma action plans are very useful, giving them a roadmap to follow when their child has an episode and putting their family, school and doctor's office on the same page.
- Clients also stated that they use the emergency room less since they began using CHAP services.

Clients indicated navigating the medical care system was difficult for them, especially the Spanish-speaking clients. Reasons for difficulties ranged from it being hard to schedule appointments due to work schedules to having legitimate reasons for missing appointments but still being removed from care. Examples of responses included:

⁶ 52 ANWM Social Worker home visits + 526 Asthma home visits = 578 asthma home visits

⁷ 102 ANWM Social Worker home visits + 385 Asthma home visits = 487 asthma home visits

My children have been in DeVos since they were kids. Now they done kicked them off the program because they said I missed too many doctors' appointments.

I was dealing with my own [healthcare issue] and I know he had an asthma appointment coming up and I ended up going to the hospital. So from the hospital I called and told them I needed to make another appointment and they said he was gonna be kicked out if we missed another appointment. I'm in the hospital, what am I supposed to do? I just had surgery on my stomach. They don't ask what's your problem why you didn't come to this appointment.

It is difficult. Last year I took my daughter to the emergency room and the doctor told me, "I am going to give you the name of a lung doctor to examine her lungs, and since it is an emergency, you should take her as soon as possible, but you have to call first." So I called and the secretary tells me "the doctor is not going to see you because you are not one of our patients here," I said I know that I am not one of your patients, but I am coming from the hospital, referred by doctor so-and-so and the doctor gave me a form with this doctor's name on it. In the end, my daughter never was seen by him and we never did anything about it.

For me, it's difficult, because I work and then try to take my daughter after I leave work, sometimes the nurses at the clinics want to give you an appointment time that is inconvenient, but I say, please, I want an appointment after work hours. I acknowledge that my daughter is sick but do not want to waste my work hours.

The majority of client indicated their involvement with the asthma program has helped them gain confidence in managing their child's asthma. Examples of responses included:

We wouldn't know what we were doing. You can't get that kind of time from your pediatrician, he's got you on the clock. He's got you answering questions before you get there so he's got all his answers lined up and you're out the door.

[The asthma educator] showed us a whole chart of how many times he's been to the emergency room over the year and how many doses of prednisone they've been giving him, how many times they gave it to him...they said that he shouldn't be having to have that so much, they're supposed to be trying to control his asthma. And we see that when she first got with us and it was like, wow, because it can be good for you but then again there's a lot of side effects to it. And we didn't know all of this until [the asthma educator] came. There's a lot of stuff that they teach us that we don't know. We didn't know nothing. They taught us everything.

We were having a hard time because when our boy tells us something and the doctors tell us something else, like, I don't know what I'm talking about and then [the asthma educator] comes in and she knows what she talking about and what to ask for. I feel good that somebody knows my kid and the doctor's telling me 'you don't know what you're talking about' and....it's helpful to have [the asthma educator] around.

Clients reported asthma educators are making extra efforts to assist them, including dealing with landlords to fix mold problems in the client's home.

In my apartment we have mold. I have mold in my bathroom on the ceiling, and then when [the asthma educator] came over I showed her and she said 'oh no' and I told her they won't listen to me – I told them my son has asthma and he couldn't deal on that and they wouldn't listen and she went to the office and they came and fixed it the same day.

Many clients emphasized how much the asthma educators helped them in interactions with their children’s doctors, including ensuring doctors’ interactions with clients are accurate and effective, spotting quality issues such as:

My son was in a room getting a treatment when [the asthma educator] came up there and it was the head doctor because his doctor had to go get the head doctor to look my son over and so he hooked him up to the machine and [the asthma educator] came in the room and she opened up the machine and said it didn’t even have a filter. That doctor looked so dumbfounded, he didn’t know what to do.

Relevancy of CHAP services was high among the asthma clients, with behavioral health being the most requested service, after asthma. (Note: CHAP began providing behavioral health case management at the end of 2010 and will evaluate outcomes further in the future.)

Question Were ED and IP rates affected by service provision?

Context Effect of service provision types on ED and IP use was examined. SRA linked de-identified claims data to de-identified CHAP client records to compare rates. This analysis looked at rates for CHAP clients that began services in 2009⁸, including visits 12 months prior to their date of first referral and 12 months post. Using CHAP service data (only those clients that received CHAP services and had 12 months pre and 12 months post data were included), ED and IP claims data was analyzed for visits for CHAP clients overall, selected CHAP services and associated member months (mm).

Findings Overall

As discussed in Section 3.2, both CHAP client and practice-level ED and IP rates have decreased from pre to post (see p.9 for details). Tables 10 and 11 present overall CHAP clients’ ED and IP findings⁹, compared to practice-level ED and IP findings (practice level findings include uncomplicated births). As shown in Table 10, the trend among both practice-level and CHAP clients was a decrease in ED use, with practice-level rates decreasing by 13.8%, while CHAP client rates decreased by 35%.

Table 10. ED Use

<i>Group</i>	<i>Period</i>	<i>Number of Visits</i>	<i>Associated mm</i>	<i>ED visits/1000 member months</i>
CHAP Clients	Pre	2523	26369	1148
	Post	1742	28024	745
Practice Level	Pre	7846	160704	586
	Post	7388	175496	505

⁸ This parameter was used due to the limitations of ED/IP claims data. In the future, additional clients will be included in the analysis as pre/post timeframes are expanded (i.e. a client beginning services in 2010 will be included in next year’s analysis because 12 month post data will be available then.)

⁹ Formula for Use Rate= (# visits/member months) X 12 X 1000

A similar trend was observed for in-patient hospitalizations (Table 11), with practice rates decreasing by 12.3% including uncomplicated births or 5.6% excluding uncomplicated births, and CHAP client rates decreasing by 68%.

Table 11. IP Use

<i>Group</i>	<i>Period</i>	<i>Number of Visits</i>	<i>Associated mm</i>	<i>IP events/1000 member months</i>	
CHAP Clients	Pre	145	26369	66	CHAP ↓68%
	Post	45	28024	25	
Practice Level	Pre	866	160704	65	Practices ↓12.3% (↓5.6%)
	Post	834	175496	57	

While both outcomes are encouraging, there are limitations to these findings. Neither ED nor IP claims data has been examined in this analysis for diagnoses, so correlations between CHAP service provision and reduced ED rates are limited because appropriateness of ED use has not been evaluated. Additionally, while the CHAP client IP rates appear very favorable, the number of visits is very low and again the correlation to CHAP service outcomes is a weak inference, as diagnoses codes for admittance have not been evaluated.

Additional analyses were run to review the initial trends in ED and IP use by service provision. These analyses are subject to similar limitations as previously mentioned and will be tracked over time as well as compared to more detailed claims data as it becomes available.

Transportation

CHAP clients who received at least one transportation service had fewer ED visits and fewer inpatient stays 12 months prior to their involvement with CHAP than they did 12 months post receiving CHAP services. ED use (Table 12) decreased 30% from pre to post among clients using CHAP transportation services.

Table 12. Transportation ED Use

<i>Period</i>	<i>Number of ED Visits</i>	<i>Associated mm</i>	<i>ED visits/1000 member mos.</i>	
Pre	374	4344	1033	↓30%
Post	311	5197	718	

In-patient hospitalizations decreased 52% from pre to post among transportation clients.

Table 13. Transportation IP Use

<i>Period</i>	<i>Number of Admissions</i>	<i>Associated mm</i>	<i>IP events/1000 member mos.</i>	
Pre	35	4344	96	↓52%
Post	20	5197	46	

Asthma

CHAP clients who received asthma services had fewer ED visits and fewer inpatient stays (when rates are compared) 12 months prior to their involvement with CHAP than they did 12 months post receiving CHAP services. As shown in Table 14, ED use decreased 38% from pre to post among clients using CHAP asthma services.

Table 14. Asthma ED Use

<i>Period</i>	<i>Number of ED Visits</i>	<i>Associated mm</i>	<i>ED visits/1000 member mos.</i>
Pre	276	2224	1489
Post	220	2897	911

In-patient hospitalizations decreased 38% from pre to post among asthma clients.

Table 15. Asthma IP Use

<i>Period</i>	<i>Number of Admissions</i>	<i>Associated mm</i>	<i>IP events/1000 member mos.</i>
Pre	23	2224	124
Post	23	2897	95

Home Visits

CHAP clients who received home visiting services had fewer ED visits and fewer inpatient stays 12 months prior to their involvement with CHAP than they did 12 months post receiving CHAP services. As shown in Table 16, ED use decreased 40% from pre to post among clients using CHAP home visiting services.

Table 16. Home Visit ED Use

<i>Period</i>	<i>Number of ED Visits</i>	<i>Associated mm</i>	<i>ED visits/1000 member mos.</i>
Pre	626	5672	1324
Post	461	7027	787

In-patient hospitalizations decreased 52% from pre to post among clients using CHAP home visiting services.

Table 17. Home Visit IP Use

<i>Period</i>	<i>Number of Admissions</i>	<i>Associated mm</i>	<i>IP events/1000 member mos.</i>
Pre	39	5672	82
Post	23	7027	39

Education

CHAP clients who received education (through letters, mailed materials and telephone consultations) had fewer ED visits and fewer inpatient stays 12 months prior to their involvement with CHAP than they did 12 months post receiving CHAP services. ED use decreased 35% from pre to post among clients receiving CHAP education services.

Table 18. Education ED Use

<i>Period</i>	<i>Number of ED Visits</i>	<i>Associated mm</i>	<i>ED visits/1000 member mos.</i>
Pre	2154	22366	1156
Post	1504	23998	752

In-patient hospitalizations decreased 34% from pre to post among clients receiving CHAP education services.

Table 19. Education IP Use

<i>Period</i>	<i>Number of Admissions</i>	<i>Associated mm</i>	<i>IP events/1000 member mos.</i>
Pre	121	22366	65
Post	44	23998	22

5.3 Asthma Outcomes

Question Has CHAP’s Asthma Control and Management Initiative resulted in improved asthma–related outcomes for children and families receiving services?

Context The Asthma Network of West Michigan (ANWM) tracks several *environmental* (e.g., exposure to smoke in the home) and *quality of life* (e.g., number of missed work/school days) asthma-related outcomes via their regular tracking forms and survey data. Data was collected from ANWM client records and indicators available for evaluation included the client’s having an asthma action plan and number of missed school days by the client. These outcomes are looked at across years due to the small population in the data.

Findings There was a 40% increase in clients (children) who had an asthma action plan from initial asthma intake to discharge, as shown in Figure 12.

% of children with Asthma With AAP
(n=153)

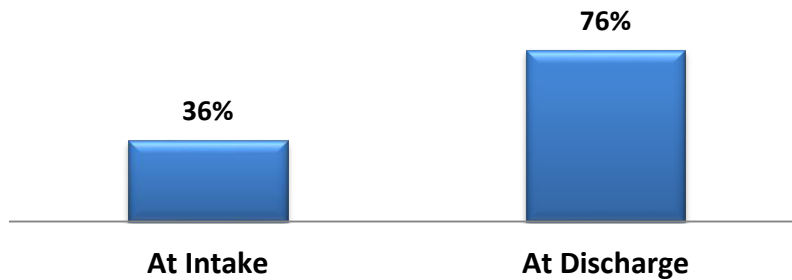


Figure 12

The average number of school days missed by clients (children) dropped sharply from intake to discharge, as shown in Figure 13.

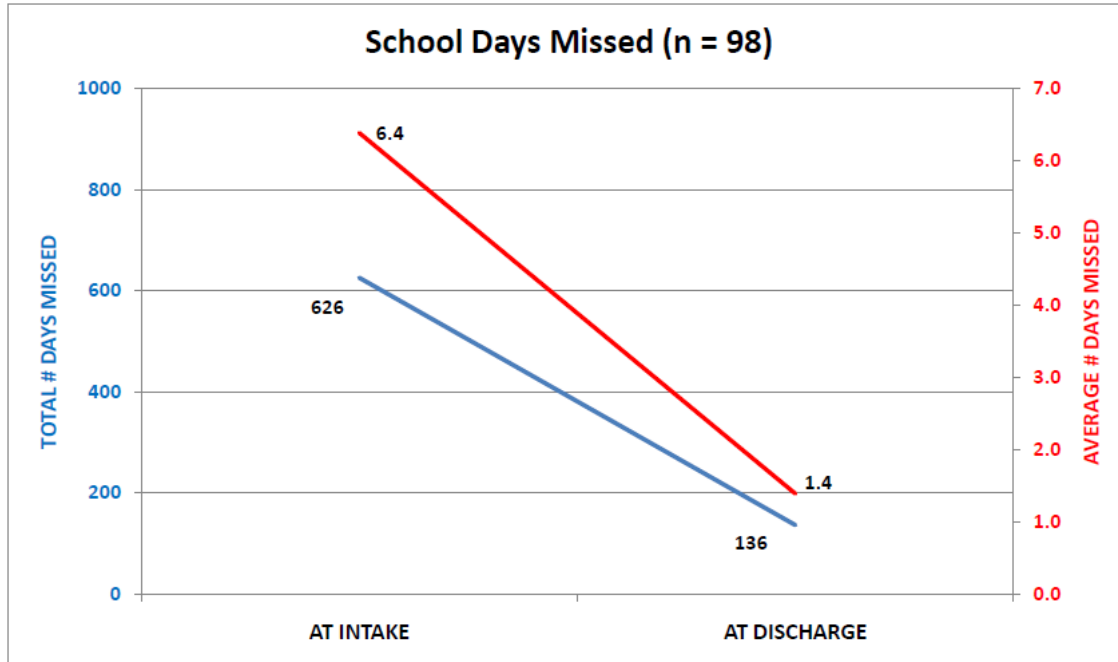


Figure 13

5.4 Child & Family Outcomes Summary

CHAP has served 3681 children from August 2008 through December 2010. Over half of these children were less than 5 years old (56%). For those clients who report their race, 34% overall were African American, followed by 26% Hispanic, and 11% Caucasian (25% were not reported).

Overall, 5834 unique children were referred to CHAP from August 2008 through December 2010. The total number of referrals for children during this timeframe was 9909, with 63% of children referred to CHAP actually receiving a tangible service from the program (calculated as the percentage of children served vs. referred overall using the unique numbers of both groups, i.e. 3681/5834). Thirty-seven percent of children referred to CHAP did not receive services, due to various reasons including refusal of services, inability to contact and contact by mail only.



CHAP provided 7990 services to its clients in 2009, with telephone and mailing activities comprising 73% of program efforts. Comparably, in 2010, CHAP provided 6280 services to its clients, with telephone and mailing activities comprising 65% of program efforts. As such, it appears CHAP is increasing the number of tangible services provided to clients.

Across both years, CHAP has provided 1065 asthma disease management services, 693 non-asthma home visits, 3555 phone consultations, and 1722 transportation services. Data show transportation services increased 30% from 2009 to 2010. Notably, the average number of asthma home visits per child increased from 3.7 in 2009 to 5.3 in 2010, which indicates improved engagement in services (i.e. fewer “drop-outs”).

Promisingly, early ED and IP outcomes show decreased rates of use by clients overall and for transportation, asthma, home visiting and education clients. CHAP client overall ED use decreased by 35% and IP use by 68%.

6 Conclusions and Recommendations

6.1 Conclusions

Two key indicators used to measure CHAP's value in reducing unnecessary healthcare costs are changes in emergency department (ED) visits and inpatient (IP) hospital admissions. A preliminary analysis shows decreases in both measures for practices associated with CHAP and more significant decreases for clients who have received CHAP support services. From the baseline year to 2010:

- Practice level ED visits declined 13.8% and IP admissions declined 12.3% if uncomplicated births are included, 5.6% excluding uncomplicated births. (Practice level data measures all Priority Health Medicaid enrollees at CHAP practices).
- ED visits among CHAP clients declined 35%, with a 62% decline in IP admissions in the 12 months following CHAP involvement compared to the 12 months prior to involvement. (CHAP clients include anyone who has received a tangible CHAP service).

From the program implementation in 2008 through the end of 2010, CHAP received approximately 9909 referrals for 5834 unique children. In total, CHAP has served 3681 children (63% of those referred) with tangible services including asthma and non-asthma related home visits, telephone consultations, education, translation and transportation services. There are a variety of reasons that the remaining 37% of children referred to CHAP did not receive services, including refusal of services, inability to contact and contact by mail only. The majority of the children served for whom the program has demographic data were 5 years old or younger (56%) and either African American (34%) or Hispanic (26%).

The outcomes from the second year of CHAP appear promising although additional analyses are needed to further investigate the long term outcomes of the program. For example, with the addition of more clients who received services by the end of the third year, the evaluation may be able to tease out whether level of service differentially affected program outcomes.

The economic analysis of CHAP yields several conclusions and considerations for future research. First, after 2 years, the demonstration project shows promise. Given the large fiscal and social costs of ill health, effective programs are likely to yield high pay-offs. This is true now, and it is likely to be even more salient in future decades. Second, the social benefit-cost analysis is positive. The baseline model yields a benefit-cost ratio of 1.2 and if we take the simple average of the downward and upward sensitivity tests, the social benefit-cost ratio of CHAP is 1.21. A summary conclusion would therefore be that the benefits exceed the costs by one-fifth. Finally, these results suggest that the economics of CHAP would be even stronger if more was known about how much patients value CHAP and how highest risk (highest cost) patients might best be served.

6.2 Recommendations

SRA's recommendations for CHAP efforts in 2011 were developed from the system, partner, and child and family levels perspective.

System Level

- **Focus efforts on expanding healthcare access for children** - Expanded access to healthcare for children was significantly less in 2010 than in 2009 (due to CHAP starting in 09 and only 2 partners being added subsequently). As this is a primary program goal, CHAP efforts in 2011 should be focused on the methods that will increase access for

children to healthcare, namely adding partner sites, which generally comes from adding health plans or increasing health plan buy-in for expansion to additional partnering practices.

- **Explore sustainability options** - CHAP's initial demonstration funding will run out in December 2011. As such, sustainability for future efforts is a key need in 2011. CHAP should use a dual approach of evaluation current resource use (program scope) to determine cost effective implementation, as well as exploring various funding options.

Healthcare Partners Level

- **Continue to facilitate partner and stakeholder feedback** – CHAP receives important feedback on partnerships, implementation and programming from the partner's perspectives through partner feedback forums, such as provider meetings, and evaluation activities. Especially in light of the sustainability issues at the system-level, partner and stakeholder input into future decisions are key during 2011.

Child/Family Level

- **Explore program efficiencies** – CHAP protocols for client engagement and program operations should be explored for ways to maximize efficiencies while still providing a high quality of service. Exploring avenues of improved efficiencies will also benefit sustainability for future efforts. CHAP can explore efficiencies through review of evaluation findings, running further data analysis into current program processes, and review programming decisions made by other CHAP programs to adopt best practices as they are available.

Recommendations for future evaluation efforts

- **Enhance outcome data collection** – The CHAP demonstration project will conclude in December 2011 and a comprehensive evaluation of the demonstration period is planned for early 2012. It is imperative for this final evaluation to collect and utilize more complete outcome data in areas such as Otitis Media, Asthma and Behavioral Health in order to provide program justification for future efforts and enhance the cost-benefit study's estimation of the social values of program outcomes. Next steps to ensure the comprehensive evaluation is possible include reviewing evaluation plans with the program, identifying any gaps in data collection that may exist and working to ensure those gaps are resolved prior to the demonstration project's conclusion.

APPENDIX A

SYSTEM-LEVEL EVALUATION TERMS

According to the terminology adopted in the First Steps System-level Evaluation Plan, there are four areas in which outcomes and impact are anticipated: quality, access, integration, and community support.

Quality (better services through best practices)

Quality, in the context of First Steps and CHAP, refers to impacts made to improve or enhance existing early childhood services. Some quality improvements will be the result of the demonstration projects supported or developed by First Steps, while others will be the result of adoption of best practices and standards by providers.

Access (more people can utilize services)

Access as an impact area is defined as increasing parents' and childrens' access to early childhood services. This is expected to be accomplished through demonstration project-level efforts and system-level advocacy for expansion o existing high-quality services.

Integration (reducing gaps and overlap in services)

Integration refers to the process of aligning provider services (and processes) within the early childhood service system. Again, this is expected to occur through both the demonstration project activities and broader system-level activities.

Community Support (community is aware of and advocates for early childhood services)

Community support refers to public will building to support and sustain the early childhood system. Impacts in this area will involve parents, community leaders, service providers and community organizations.

APPENDIX B: REFERENCES

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END NOTES

ⁱ See Levin and McEwan (2001). Data from questionnaires completed by CHAP staff. All figures are reported in 2011 dollars.

ⁱⁱ Clients are new children to CHAP, not children who may have cases extending beyond one year.

ⁱⁱⁱ Another issue is how long the benefits of improved health care persist. If a child is treated adequately at an early stage, this may reduce hospitalization costs over multiple years. To be conservative, we assume only one year of benefits in terms of medical costs.

^{iv} These are all in 2011 dollars. The ED visits are from the Medical Expenditure Panel Survey (2004) and the hospitalization costs are adjusted from Stanford et al. (1999) and Gendo et al. (2003).

^v Approximately, families value each lost day of school at the same amount as if it were a lost day of work; this is the case regardless of whether the parents are employed or not (for full details of the model, see Dickie, 2005). We use daily wage rates from <http://www.milmi.org/?pageid=67&subid=124>.

^{vi} We use the averages of the costs per ED visit (\$335) and per hospitalization (\$3,450).

^{vii} See Schoeni et al. (2011).

^{viii} See Neidell (2004) and Nores et al. (2006).

^{ix} A further consideration is whether Medicaid reimbursements are accurate to the types of ED visits and hospitalizations averted. Given the low cost per ED visit, it is unlikely that any Medicaid difference will affect the results.

^x It should be noted that the social and fiscal CBAs sought out different data in the analysis of ED visit and inpatient hospitalization rates over time. For the purposes of the social CBA, the trend was calculated by comparing rates for each CHAP client during the 12 months prior and 12 months following program referral. By definition, only CHAP clients who had been referred for services before the end of 2009 could be included in the social CBA. For the purposes of the fiscal CBA, PH calculated ED visit and inpatient hospitalization rates for all CHAP eligible clients during 2010 in comparison to the baseline year. As the program progresses, the distinction between these two approaches will diminish.