

Spring 2012

Primary Prevention of Preschool Children Through a Patient Centered Medical Home Approach

Joanna Dominick
Regis University

Follow this and additional works at: <http://epublications.regis.edu/theses>



Part of the [Medicine and Health Sciences Commons](#)

Recommended Citation

Dominick, Joanna, "Primary Prevention of Preschool Children Through a Patient Centered Medical Home Approach" (2012). *All Regis University Theses*. Paper 159.

Regis University
Rueckert-Hartman College for Health Professions
Final Project/Thesis

Disclaimer

Use of the materials available in the Regis University Thesis Collection ("Collection") is limited and restricted to those users who agree to comply with the following terms of use. Regis University reserves the right to deny access to the Collection to any person who violates these terms of use or who seeks to or does alter, avoid or supersede the functional conditions, restrictions and limitations of the Collection.

The site may be used only for lawful purposes. The user is solely responsible for knowing and adhering to any and all applicable laws, rules, and regulations relating or pertaining to use of the Collection.

All content in this Collection is owned by and subject to the exclusive control of Regis University and the authors of the materials. It is available only for research purposes and may not be used in violation of copyright laws or for unlawful purposes. The materials may not be downloaded in whole or in part without permission of the copyright holder or as otherwise authorized in the "fair use" standards of the U.S. copyright laws and regulations.

Primary Prevention of Preschool Children Through a Patient Centered Medical Home

Approach

Joanna Dominick

Submitted as Partial Fulfillment for the Doctor of Nursing Practice Degree

Regis University

April 9, 2012

Copyright © Joanna B. Dominick

All rights reserved. No part of this work may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the author's prior written permission.

Executive Summary: The Primary Preschool Prevention Project

Problem

Data from the Colorado Health Department Child Health Survey (2010) confirmed particular needs for increased enrollment in Medicaid and Child Health Plan Plus (CHP+) and improved coordination of health services. Families in Adams County continue to face challenges and barriers in the Medicaid and CHP+ enrollment and retention process. Improved outreach at the local level is needed to improve access to these vital resources for children in Adams County. The PICO is as follows: Population: parents of preschool children ages one to five; Intervention: a centralized referral and tracking system; Comparison: no current referral or tracking system; and Outcomes: overall impact of access to healthcare through a patient centered medical home (PCMH) approach and overall impact of preventive care exams through a PCMH approach.

Purpose

The purpose is to ascertain whether a referral and tracking system will identify children with healthcare needs, improve access to the healthcare system from the preschool, and improve preventive care in coordination with a PCMH.

Goal

The project aims to increase coordinated, comprehensive, and preventive health and education in a culturally competent manner through a referral and tracking system.

Objectives

The first outcome objective of the preschool primary prevention project included measuring the impact of preventive care access through a PCMH approach. Quantifiable measures were an increase in the numbers of children from baseline who received a referral to a PCMH. Outcome objective two involved measuring the impact of preventive care exams through a PCMH approach. Quantifiable measures included an increase in the numbers of children, from baseline, who received preventive care services in a PCMH.

Plan

IRB approval was obtained from Regis University. However, IRB approval was not required at the community site. The referral and tracking system was implemented in the preschools and community agencies. Access to healthcare and preventive health care techniques were evaluated using the investigator's measurement tool which consisted of a Likert scale. Preschool demographic data, preschool tracking data, child demographic data, child access techniques, and child preventive techniques data was then collected and analyzed by hand.

Outcomes and Results

A total of 900 families completed the initial parent survey tool in ten private preschools in Adams County. One hundred twenty six surveys were returned to the centers indicating a need for medical, dental, or mental health assistance. Five children needed medical assistance, 14 children needed dental assistance, and 11 children needed mental health assistance. Access was improved through the referral system because all children indicating a need for medical assistance did not have a previous healthcare provider and were referred to a PCMH. Preventive exams were not improved in this study. Both children indicating a need for medical assistance were up to date on required exams and immunizations. However, the referral and tracking system did have the potential to improve other preventive care techniques not previously received by the children.

Table of Contents

I. Preliminary Pages.....	i
A. Copyright Page.....	i
B. Executive Summary.....	ii
C. Table of Contents.....	iii
D. List of Figures.....	vi
E. List of Appendices.....	vii
II. Body of Report.....	1
A. Capstone Overview.....	1
B. Problem Recognition.....	2
a. Statement of Purpose.....	2
b. Problem Statement.....	3
c. PICO.....	3
d. Project Significance, Scope, and Rationale.....	3
e. Theoretical Foundation.....	6
f. Literature Selection and Scope of Evidence.....	8
C. Review of Evidence.....	9
a. Background of the Problem.....	9
b. Systematic Review of Literature.....	10
D. Project Plan and Evaluation.....	13
a. Market/Risk Analysis.....	13
b. Project Strengths, Weaknesses, Opportunities, and Threats..	14
c. Needs, Resources, and Sustainability.....	16

d. Stakeholders.....	19
e. Cost-benefit analysis.....	20
f. Mission and Vision Statement.....	23
g. Goals.....	24
h. Objectives.....	25
i. Logic Model.....	27
j. Population.....	30
k. Setting.....	32
l. Methodology and Measurement.....	33
m. Protection of Human Rights.....	36
n. Instrumentation.....	38
o. Data Collection and Procedure.....	40
E. Project Findings and Results.....	42
a. Findings.....	42
b. Results.....	45
F. Limitations, Recommendations, Implications for Change.....	48
a. Limitations.....	48
b. Recommendations.....	49
c. Implications for Change.....	51
III. References.....	54
IV. Appendices.....	57
a. Systematic Review of Literature.....	58
b. Logic Model.....	73

c. Conceptual Diagram.....	75
d. Measurement Tool.....	76
e. Timeline.....	78
f. Budget and Cost-Benefit Analysis.....	82
g. IRB Approval Letter.....	83
h. CITI Training Certificate.....	84
i. Agency Letters of Support.....	85

List of Figures

I. *Figure 1* Preschool Demographic Data. The chart represents the demographic data of each preschool. Each preschool is represented by their initials. Total enrolled is the total number of children in the preschool. Age is represented as the oldest age the preschool admits. Lunch program is the number of children in the preschool on a free or reduced cost state program. IZ waivers is represented as the number of immunization requirements that were waived by the parent. Physicals represent up to date well child exams. IZ UTD represents the number of children in the preschool that are up to date on required immunizations. 43

Figure 2 Preschool Tracking Data. The graph measures the number of referrals made by each preschool. Preschools are represented by their initials. CHS is the medical agency called Community Health Services. Community Reach is the mental health agency. KIND is the dental agency called Kids In Need of Dentistry..... 44

List of Appendices

I. Appendices.....	57
A. Systematic Review of Literature.....	57
B. Logic Model.....	61
C. Conceptual Diagram.....	63
D. Measurement Tool.....	64
E. Timeline.....	66
F. Budget and Cost-Benefit Analysis.....	67
G. IRB Approval Letter.....	68
H. CITI Training Certificate.....	69
I. Agency Letter of Support.....	70

Primary Prevention of Preschool Children Through a Medical Home Approach

The Doctor of Nursing Practice (DNP) capstone project is a demonstration of the scholarship of integration and application to clinical practice. The DNP project focuses on a practice change initiative that is supported by a systematic review of literature. The practice change initiative aims to change the health outcomes for an entire population. The DNP capstone project will follow The Process Model as presented by Zaccagnini and White (2011). The DNP project must evolve through the nine steps of The Process Model to be considered a scholarly practice change initiative. The project demonstrates the significance of each of the nine steps of The Process Model. Additionally, the project must include the problem recognition and definition, the problem statement, a risk analysis of the project, mission and vision statements, desired objectives and outcomes, an evaluation plan, and a cost-benefit analysis.

The purpose of the capstone project was to examine the impact of a referral and tracking system upon health care access and preventive care exams through a patient centered medical home (PCMH) approach in the preschool population in Adams County, Colorado. Community Health Services of Adams County served as the project's PCMH referral clinic. Thirteen low-income preschools in Adams County served as the study group. Previously, a centralized referral or tracking system in Adams County did not exist that linked children in preschools to a PCMH. Consequently, the underlying purpose of the capstone project was defined. Additionally, the project discussed the needs assessment, key stakeholders involved, and the cost-benefit analysis of initiating change in the preschools and community health clinics. Project objectives, mission statements, vision statements, and goals were analyzed. Furthermore, an evaluation plan

was identified that included the project methodology and measurement, logic model, and the protection of human rights procedures. Finally, findings, results, and limitations were identified and implications for change were recommended.

Problem Recognition and Definition

Statement of Purpose

The preschool primary prevention project was designed to address low levels of health care utilization related to access and improve preventive health techniques and disease self-management for low-income families with children. State and national laws have increased funding for children's healthcare coverage in both the Medicaid and Child Health Plan Plus (CHP+) programs. The rates of Medicaid and CHP+ coverage are improving for children in Colorado. In 2006-2008, 90 percent of children in Colorado were covered by health insurance. In 2007-2009, 91 percent were shown to have coverage (Colorado Department of Public Health and Environment-Health Statistics [CDPHE], 2009). Gaps in healthcare coverage are also improving. In 2006 to 2008, 8.3 percent of children had gaps in health insurance within the past 12 months; whereas in 2007 to 2009, only 7.8 percent of children had gaps in health insurance coverage (CDPHE). Despite these improvements there are still many children that are covered by health insurance but do not have a medical home, thus they are seeking primary care in the emergency department (ED). The state funded community clinics are overwhelmed with uninsured families and fewer private practices are accepting Medicaid and CHP+ patients due to poor reimbursement rates, problems with business processes associated with accepting Medicaid, poor support for care coordination, and difficulty in obtaining and affording interpreters for healthcare visits (Colorado Children's Healthcare Access

Program [CCHAP], 2011). Consequently, a need exists to address barriers to healthcare access and increase preventive care starting in the preschools in Colorado.

Problem Statement

Enrolling children in Medicaid and CHP+ does not ensure children will obtain a primary care provider that provides comprehensive and continuous care. Additionally, enrolling children in Medicaid and CHP+ does not ensure continuous coverage and access to healthcare and oral care (Early Childhood Partnerships of Adams County [ECPAC], 2009). Improved outreach at the local level is needed to improve access to healthcare and provide comprehensive, continuous care through a PCMH approach.

PICO

The capstone project was set forth to address the lack of healthcare access and coordination of medical services. Zaccagnini and White (2011) stated in order to practice evidence based nursing, it is necessary to formulate a question that addresses the population of interest, the intervention, a comparison, and an outcome (PICO). The PICO is as follows: Population: parents of preschool children ages one to five; Intervention: a centralized referral and tracking system that begins in the preschools and is disseminated out to a PCMH; Comparison: no current tracking or referral system that is in place in Adams County preschools; Outcomes: overall impact of access to healthcare through a PCMH approach and overall impact of preventive care exams through a PCMH approach. The PICO question asks what impact does a centralized referral and tracking system have upon preventive health care access and preventive care exams through a PCMH approach for preschool children ages one to five in Adams County?

Project Significance, Scope, and Rationale

The DNP capstone project involved initiating a referral system from thirteen low-income early childhood education sites in Adams County, Colorado, to a community based primary care service center or PCMH. The at risk population included children, ages one to five, enrolled in a preschool program that were living at or below the federal poverty level and who were also eligible to receive Medicaid and CHP+. A PCMH is defined as "a team approach to providing quality and cost-effective care. A medical home is a family-centered approach that provides comprehensive, continuous, coordinated, family-centered, accessible, compassionate, and culturally-sensitive care" (Colorado Medical Home, 2009, p. 1). Additionally, the referral system was funded by a grant from the Colorado Trust and Mile High United Way. The capstone project was set forth to specifically evaluate the outcomes of the referral and tracking system. The primary outcome of interest was assessing whether the referral system increased healthcare access to a PCMH. This outcome was measured by assessing the number of referrals sent to the PCMH out of the total number of referrals sent to all healthcare sites. Moreover, a secondary objective included assessing whether the referral system in the preschool study groups increased the number of children who received preventive care exams (age appropriate medical care as directed by the American Academy of Pediatrics) from baseline. This objective was measured by comparing baseline exam status to current exam status in the program. Age appropriate medical care included well child exams, weight, height, body mass index, head circumference, blood pressure, vision screening, hearing screening, developmental assessment, and anticipatory guidance. The referral system began with a basic survey that was distributed to the parents during the

normal preschool enrollment period in the fall of 2011. There were three basic questions that asked information about the child's insurance status, the child's health status, and the child's dental status. Health status questions that were pertinent for baseline data included:

1. Does your child have a doctor that he/she sees regularly?
2. Has your child had an annual exam in the past 12 months?
3. Do you know if your child is up to date on his/her immunization status?

The schools collected the health status information and releases were signed by the family. The preschool director faxed the signed release form to the PCMH and the health clinic then arranged an appointment for the child. The capstone project measured the healthcare outcomes of the referral system by initiating an additional survey once the family was referred to the community agency. The survey that was given to the family addressed health prevention questions and demographic questions. Additionally, a provider survey was sent to CHS to collect data about the type of visit that was conducted at the initial appointment. Community mentors have voiced concern about the lack of time and funding to assess the outcomes of each project, and therefore the capstone project was developed to measure the outcomes of the community referral system.

Zaccagnini and White (2011) stated, "Systems thinking across organizations offers a discipline for understanding the unique structures that undergrid complex systems and, through that understanding, a way to effect change that is significant and enduring" (p. 42). The DNP is responsible for implementing evidence-based care and affecting outcomes at the systems level. Initiation of the referral system affected the outcomes on a community based, system wide level. The purpose of the outcomes did

not directly affect patient care; however, they involved more organizationally-sensitive concepts. The outcomes involved the concepts of community resource use, access to care, and cost effective systems.

Theoretical Foundation

The delivery of a high quality nursing practice is founded on philosophy, knowledge, and theory. The preschool primary prevention project's philosophy was guided by Nola J. Pender's Health Promotion Model (1987). Pender's model was an essential component for the prevention outcome of the DNP capstone project. Pender's model reflects the behavioral science perspective and depicts the active role of the patient interacting with their environment as they pursue health (Pender, 1996). Furthermore, Pender reiterates that health promoting behavior is determined by individual characteristics and experiences as modulated by perceptions and interpersonal and situational factors. Pender's health promotion model integrates several constructs including cognitive-perceptual components, modifying factors, and participation in health-promotion behavior. Additionally, Pender identifies major concepts that affect a health promoting behavior. Personal concepts include personal biological factors, personal psychological factors, and personal sociocultural factors (Pender). Behavior cognition concepts include perceived benefits of action, perceived barriers to action, perceived self-efficacy, and activity related effect (Pender). Other concepts include interpersonal influences, situational influences, and a commitment to a plan of action (Pender). Consequently, Pender's health promotion model has assumptions that support the preschool primary prevention project. Pender's model states individuals interact with the environment, progressively transforming the environment and being transformed over

time. A critical component of early childhood social-emotional development is that it happens within the context of the child's family and other care giving relationships, such as within childcare or preschool settings. Consequently, social-emotional development and school readiness are directly related to a healthy child. Preventive behaviors, such as participating in well child exams, are health promoting behaviors that keep young children healthy and attending school regularly.

The Intervention Wheel is a population based community health theory that served as an additional guide for the direction of the preschool primary prevention project. The model was originally introduced in 1998 by the Minnesota Department of Health (Keller, Strohschein, Lia-Hoagberg, & Schaffer, 2004). Recently, the model went through a validation of interventions by an extensive literature review and critique of regional and national experts. As a result, the Intervention Wheel was widely disseminated in public health nursing practice, education, and administration (Keller et al.). The Intervention Wheel is a graphic description of public health practices, not specific to nursing. Additionally, the purpose of the Intervention Wheel is to depict how public health improves population health through interventions with communities, individuals, and families in the communities and the systems that impact the health of a community (Keller et al.). There are two major concepts of the Intervention Wheel population theory. The Intervention Wheel encompasses three levels of practice including community, systems, and the individual and family (Keller et al.). Additionally, the Intervention Wheel encompasses 17 public health interventions. Furthermore, other characteristics of population-based health practices include a community assessment, broad determinants of health, and an emphasis on health

promotion and disease prevention. The model also encompasses disease prevention at the primary, secondary, and tertiary levels (Keller et al.). Consequently, the model is appropriate for the preschool primary prevention project because the referral and tracking system intervention impact the health of children, which in turn, impacts the health of the community.

Literature Selection and Scope of Evidence

A search of literature was conducted using terms relating to the PCMH, referral systems, care coordination, multidisciplinary care, and preschool children. Major electronic databases were searched including CINAHL, PubMed, ScienceDirect, Ovid, Cochrane Library, MEDLINE, and Academic Search Premier. Additionally, the Health and Psychosocial Instruments database was searched to identify a knowledge tool for the capstone project. Finally, a comprehensive review was conducted by searching references and citations from targeted journals and original works.

Articles were first screened for initial relevance related to pediatrics and a PCMH. Articles were then screened again for relevance and for the main focus of a referral system related to a PCMH. Studies were included if they addressed the care of children relating to healthcare access or prevention. Additionally, studies were included if they examined the components and explained the process of a PCMH approach. Specifically, ideal studies that were included addressed care coordination of pediatric patients through a PCMH approach. Articles were also included if they addressed barriers to healthcare access and preventive care as related to their socio-economic status.

Thirty-five articles met the inclusion criteria. Strategies for initiating a referral system to aid in healthcare access and prevention were extracted from the articles.

Additionally, strategies were extracted from the articles for improving low levels of access and health care utilization in low-income children through a PCMH approach.

Review of Evidence

Background

Access to health care is an important service for children. One study found children with health insurance are more likely to access timely and cost-effective care (MCH County Data Set, 2011). Additionally, low income children have been found to have low levels of healthcare utilization and a high level of unmet healthcare needs (Tataw, James, & Bazargan, 2009). Low health status prevents development of a healthy child and the ability to learn and function in society.

One key issue that continues to be a problem for children in Adams County is lack of health insurance coverage. In 2009, over 90 percent of children ages one to 14 in Colorado were covered by health insurance; in Adams County only 80 percent of children were covered by health insurance (CDPHE, 2009). In 2008, 38,537 children were enrolled in Medicaid (CDPHE). Of these children, 4,667 were eligible but not enrolled (EBNE) in Medicaid (CDPHE). For CHP+, 8,955 children were enrolled and 2,584 children were EBNE. Of 5,469 uninsured children ages zero to five in Adams County, another estimated 3,227 children were EBNE in Medicaid and CHP+; this leaves another 2,242 children who were not even eligible for coverage (CDPHE).

While the rates of uninsured children in Colorado have improved, the uninsured rates for Adams County have become grimmer. Despite these gains for Colorado, the state remains second to worst in the nation for insuring children living in poverty (CDPHE, 2009). Families in Adams County continue to have knowledge deficits in how

to overcome barriers to the Medicaid and CHP+ enrollment process and have knowledge deficits in how to access and coordinate medical and dental care for their children. Data from the Colorado Health Department Child Health Survey (2010) confirmed particular needs for increased enrollment in Medicaid and CHP+, improved coordination of healthcare services, and improved access to services. Families in Adams County continue to face challenges and barriers in the Medicaid and CHP+ enrollment and retention process.

Systematic Review of Literature

In conducting the systematic review of literature, very few articles were found that directly linked a referral system in a school or community to a PCMH (see Appendix A). Many of the articles were related to defining the components of the PCMH. However, Tataw, James et al. (2009) conceptualized a model called the Preventive Health Education and Medical Home Project (PHEMHP). The PHEMHP model was intended to reduce low levels of health services utilization and improve preventive health techniques and disease self management for low income families with the ultimate goal of attaching each child to a PCMH. The PHEMHP model was designed to be implemented through educational and case management strategies that address individual determinants of health services utilization (Tataw, James et al.). The PHEMHP model focused on coordinating and maximally utilizing existing health and medical services within the community for improving the health of a child; goals that are very similar to the preschool primary prevention project goals. Tataw, Kima-Johnson, Rahman, and Bean (2007) developed the Health Services Utilization and Improvement Model (HUIM) to reduce low levels of health care utilization and improve preventive health in Head Start

families to attach each child in the program to a PCMH. The model was implemented through case management strategies to address health service utilization and provider accommodation. The model was developed to be replicated in other child care settings.

Another model in the literature that closely resembled the preschool primary prevention project is called the CCHCAP model (CCHCAP, 2011). The purpose of the program is to address barriers that have prevented private pediatric and family practices from accepting children enrolled in Medicaid and provide them with a medical home (Silow-Carroll & Bitterman, 2010). CCHCAP ensures every child enrolled in Medicaid and CHP+ receives comprehensive care from a medical home (CCHCAP). Furthermore, a recent evaluation showed children covered by Medicaid and CHP+ with a medical home supported by CCHAP visited the emergency department less often, had more preventive care visits, and were less expensive for the state Medicaid program than children in non-CCHAP supported practices (Silow-Carroll & Bitterman). The preschool primary prevention project also aims to ensure all children enrolled in the study preschool program receive comprehensive medical care from a medical home.

Another article that served as a strong foundation for the capstone project involved examining preventive care services in the PCMH. The objective of the qualitative study was to describe the characteristics of children with medical homes and the relationship between presence of a medical home and selected health care outcomes (Stickland, Jones, Ghandour, Kogan, & Newacheck, 2011). The outcomes of the study found children who received care in medical homes were less likely to have unmet medical and dental needs and were more likely to have annual preventive medical visits (Strickland et al.). The elements of the study were relevant to the purpose of the capstone

project, discovering whether a referral system will increase preventive visits through a PCMH approach thus decreasing unmet medical needs.

Nelson, Tandon, Duggan, and Serwint (2009) completed a study that determined perceived benefits and barriers in communication between pediatric providers and home visitors. Qualitative data was collected from three focus groups that consisted of paraprofessional home visitors, parents receiving home visiting, and pediatric providers whose patients received home visiting. The study found to provide optimal care for children within the medical home, pediatric providers needed to partner with community agencies and resources. Additionally, the authors found greater coordination of services between the provider and a community agency may help reinforce advice and anticipatory guidance given in the medical home.

Still et al. (2010) described perspectives of the medical home as it relates to child and adolescent health. Coordination of care is a primary component of the medical home and often involves a number of community agencies and schools for children (Still et al.). The authors state it will be important to operationalize and measure components of the medical home to improve child health care quality (Still et al.). Furthermore, the authors state schools play a key role in the management and participation of health conditions in children. Still and colleagues indicated that community collaboration and coordination must include early education and child care, schools, and families as key partners in managing the health of children.

Ferrante, Balasubramanian, Hudson, and Crabtree (2010) examined whether PCMH principles were associated with the receipt of preventive services. Association of PCMH principles with preventive services was examined using hierarchical linear

modeling (Ferrante et al.). PCMH principles were a personal physician, physician-directed team, whole-person orientation, coordination of care, quality and safety, and enhanced access (Ferrante et al.). Preventive services included cancer screening, lipid screening, influenza vaccination, and behavioral counseling. Ferrante et al. concluded having a well-visit in the last five years and having a referral system to link patients to community programs were significantly associated with higher rates of preventive services.

Project Plan and Evaluation

Market Risk Analyses

The preschool referral and tracking system targeted low-income families in Adams County with children ages one to five. The overall growth in the number of children living at or below 130 percent of poverty was 87 percent (Adams County Colorado, 2009). Additionally, the Adams County community assessment report estimated 23.5 percent of all preschool age children in Adams County live in poverty.

Data from the Colorado Health Department Child Health Survey (2010) revealed needs in Adams County for increased enrollment in Medicaid and CHP+, improved coordination and integration of health services, more availability of oral health services, and a need to address strategies to implement childhood nutrition and obesity prevention. The Adams County community assessment report identified particular concerns of parents in Adams County related to overwhelming paperwork for the Medicaid and CHP+ application process, lack of coordination of healthcare services, and lack of education on parenting, child health, and nutrition. The Adams County community assessment report found efforts could be most productive for families in the areas of: 1)

knowledge resources; 2) access to healthcare; 3) coordination of care; and 4) nutrition information.

Project Strengths, Weaknesses, Opportunities, and Threats

Cleverley, Song, and Cleverley (2011) stated a SWOT analysis is "A technique to evaluate an organization's strengths, weaknesses, opportunities, and threats" (p. 535).

The SWOT analysis is often used in strategic planning for a project. Strategic planning identifies a single plan for an organization that establishes priorities to accomplish in the future (Kruschke & Stoeckel, 2011).

The preschool primary prevention project possesses several key strengths that were crucial for the implementation and evaluation of outcomes. A primary strength of the project is a strong, countywide coalition of diverse community partners. Partners that were involved with parts of this project included ECPAC, CHS, Partnerships for Healthy Communities of Adams County, Kids in Need of Dentistry (KIND), Community Reach Center, and Child Find. Consequently, a strong coalition of community members aids in resource development and coordination of partners and is a major driving force for the referral system. Additionally, many of these community members have high visibility and respect at the state and local levels. Many of these organizations also have programs that demonstrated results and improvements in the quality of evidence based child care throughout the county. Moreover, another driving force of the initiation of the referral system was the funding provided by the grant from Colorado Trust.

The preschool primary prevention project also possesses weaknesses that challenged the project. A primary weakness is lack of a strong infrastructure to implement the components that need to be addressed by the project. Additionally, there

was a lack of discretionary funding and stable funding. The initial referral system was funded by a grant that was earmarked for only specific activities. Systems building funding was also cut this year by the state of Colorado. Furthermore, restraining forces included a lack of time to effectively implement the referral system in the 13 preschools. The referral system was complex and involved many steps and personnel that were difficult to contain over a 15 month time allotment. Other restraining forces for implementing the referral system included a lack of funding and staff resources at the preschools and community agencies.

Many opportunities existed for the preschool primary prevention project. A primary opportunity existed to increase funding at the state and national levels for early childhood system building. Most importantly opportunities existed to impact positive outcomes for children and families through systematic change. Potential positive outcomes included reducing child abuse and neglect, improving children's access to preventive oral, physical health, and mental health services. Opportunities also existed to build relationships with and between community agencies and the school system to improve children's health. Opportunities existed to close the achievement gap and improve school readiness for all children involved in the project.

Potential threats existed with opportunities that challenged the perspective outcomes of the preschool primary prevention project. A significant threat to the project was a number of community and business leaders in Adams County were not fully aware of their role and potential impact in improving early childhood care and education systems throughout the county. Additionally, the funding environment was very competitive and funding was being reduced for the 2011 to 2012 grant cycle.

Furthermore, funding threats existed that might limit growth of the project state-wide in the future.

Need, Resources, and Sustainability

A needs assessment is performed to gather information that will inform the project (Zaccagnini & White, 2011). A population of interest was initially analyzed. Additionally, an organizational assessment, assessment of resources, and identification of outcomes was conducted. Strickland et al. (2011) stated children who received care in medical homes were less likely to have unmet medical and dental needs and were more likely to have annual preventive visits. Children ages birth to five who have limited or no access to health services are known to experience greater difficulties related to physical and social development and learning than those who receive consistent health services through the early years (Strickland et al.). Consequently, there are a number of factors that limit access to health care for children in Adams County, thus producing a need for development and coordination of community resources. Geography is a factor because of the distance across the county and because of limited access to transportation (ECPAC, 2009). Poverty is another key factor in obtaining health services. Approximately 21 percent of households in Adams County lived below the Colorado self-sufficiency standard (Kids Count Colorado, 2011). Parents of these low income children have higher priorities than healthcare, including obtaining food, employment, and housing. Furthermore, challenges in Medicaid and CHP+ enrollment and retention present a barrier in access to healthcare for children in Adams County. Frustration exists with the cumbersome, time-consuming, and often error prone enrollment and retention process. The Adams County health and human services and community health services are

overburdened, which results in children being turned away or experiencing long wait periods for routine exams (ECPAC, 2009). Additionally, nearly half of all children in Adams County have a Hispanic or Latino ethnicity. Services are needed that incorporate culturally sensitive policies, educational content, and language. Finally, there is a lack of systems and consistent messages. ECPAC recognized greater coordination of services and more effective referral systems could alleviate some of the current challenges.

Healthcare resources are abundant in Adams County. According to the 2009 Adams County Community Needs Assessment Report, 42 percent of survey respondents believed more health care facilities were needed in Adams County. Platte Valley Medical Center is located in Brighton and is a full service hospital. In Commerce City, the Medical Plaza at Turnberry offers obstetrics/gynecology (OB/GYN) and pediatric care services. Strasburg has a medical center, women's health center, physical therapy clinic, and orthodontist. North Suburban Medical Center is a full service hospital in Thornton. St. Anthony's North is also a full service hospital in Westminster. The Children's Hospital at Fitzsimons is located in Aurora. Additionally, public health clinics in the county include Tri-County Health Department, Clinica Campensina, Salud Health Center, Rocky Mountain Youth, and Metro Community Providers Network.

The sustainability and feasibility of the preschool primary prevention project is promising. There is a consensus that Adams County needs to focus on early childhood outcomes to effectively deliver comprehensive health care to children and families. Sustainability for the project exists because there is joint planning and goals for the program among the parents, organizations, and healthcare agencies involved. Additionally, the partners involved are committed to the project and the potential impact

the referral system will have upon these children. Frequent and regular communication between the preschools, ECPAC, and CHS is in place. Furthermore, a common toolkit was provided by ECPAC so all partners have coordinated policies and messages. Finally, the potential outcome of the centralized referral and tracking system was to increase the number and ease of referrals, employ a mechanism for follow up, and provide a seamless connection between child care centers and health care providers (Health Integration Narrative, 2009).

Risks and unintended consequences exist for the project. Risks included a lack of public engagement. Community agencies and preschools may lose interest in the referral system over time and may not follow through with their role in improving quality of care for young children. Additionally, the community agencies and preschools may not fully recognize their role and potential impact in improving early childhood care and education systems. Other risks include a lack of interest from the parents or a lack of knowledge regarding preventive care services. Parents may not have any interest in completing an additional form in the already complex enrollment packets. Possible unintended consequences are a lack of follow up from the community agencies if a referral is made at the preschools. There is a possibility that some referrals may be lost in the system and there will be a lack of follow through once the family indicates they would like healthcare assistance. Consequences would be a lack of assistance in obtaining medical, dental, and mental health needs for the children.

Stakeholders

Stakeholders are those individuals or organizations that have an interest in the outcomes of the project and those that will be affected by the project (Zaccagnini & White, 2011). Adams County leaders have sought to coordinate services and systems to ensure the children of Adams County are ready for school. In 2004, key stakeholders in Adams County came to a consensus that a collaborative, community based early childhood partnership was needed to accomplish mutual goals (ECPAC, 2011). These goals included developing a coordinated system of services and supports for young children and families through partnerships and improving school readiness by increasing the quality, availability, and affordability of early childhood services and supports (ECPAC). ECPAC is a council that provides a venue for coordinating services to achieve specified outcomes for the underserved preschool population in Adams County including early learning, family support and education, social, emotional and mental health, and physical health.

ECPAC, CHS, and the 13 privately funded preschools in Adams County are examples of organizations that have a vested interest in the project outcomes. ECPAC has a vested interest because the organization initiated the referral system that started in the preschools. ECPAC's goals were to identify the outcomes of the initial referral system, discovering whether the system would increase preventive visits thus decreasing unmet medical needs. Additionally, CHS was interested in the outcomes of the project because they wanted to increase their capacity and their outreach in the community of Adams County. The preschools are stakeholders because they can improve unmet health needs of their children by participating in the program, thus improving the learning and socio-behavioral outcomes. Other stakeholders included the families and children

involved in the program. Families with children in Adams County are vested in the outcomes of the project because they will be the beneficiaries of increased access to care, improved coordination of services, and overall improvement in the preventive health of their child. Finally, other stakeholders that are interested in the project were members of the health integration planning group including the director of Health and Disabilities at Adams County Head Start, the medical director at Clinica Campesina Family Health, the dental director at Salud Family Health, and the nurse care coordinator at Tri-County Health Department.

Cost-Benefit Analysis

In performing a cost-benefit analysis, costs of the project are added and subtracted from the benefits of the outcomes (Zaccagnini & White, 2011). Decision makers must weigh the benefits of the program to the costs of the project (Cleverley et al., 2011). Funding for the initial referral and tracking system that began in the preschools was provided by a grant from Mile High United Way and Colorado Trust. A grant of \$5,750,000 was given to 26 early childhood sites for early childhood health integration. ECPAC received a portion of this grant to develop three projects related to the early childhood referral and tracking system. The budget for the project was \$73,000. The grant specifically covered the salary of the ECPAC coordinators. The ECPAC director received 0.5 FTEs, which amounted to \$35,000. The ECPAC coordinator received 0.2 FTEs, which amounted to \$10,000. The research project coordinator spent 400 hours on the project at \$25 per hour, amounting to \$10,000. Funding for the staff involved in the project at CHS, KIND, and Community Reach was approximately \$200 for each agency. Furthermore, no funding was provided once the referral reached the health care clinic.

ECPAC partners provided in kind office space and equipment, routine supplies, and miscellaneous expenses. Office equipment was the highest cost during the implementation phase of the project. Approximately, \$1,000 dollars worth of paper and printing supplies was utilized to make the toolkit packets for each preschool. Additional costs included the initiation of two basic training sessions for the preschool directors. During this two hour time period, directors were given the specifics of the referral and tracking system and were directed in how to carry out their part. Other costs of the project included gas and driving expenses. Three days were spent driving to each preschool site and to CHS to explain and implement the referral system. Additionally, costs may have accrued for the time spent filling out the consents and questionnaires at the initial health visit to CHS by decreasing the number of patients seen per day. Costs may have accrued for the preschool directors for carrying out functions of the project rather than focusing on other routine daily tasks. Finally, overhead costs at ECPAC were calculated. Indirect costs per month included rent, electricity, trash, water, phone, and internet. Rent is \$400 per month, electricity is \$100 per month, trash is \$50 per month, water is \$200 per month, phone is \$100 per month, and internet services are \$100 per month. Total indirect costs per month were \$950 and this value was multiplied by 12 months to equal \$11,400. Total costs were estimated to be \$69,900 (see Appendix F).

The benefits of the research project lie mostly in the importance of the knowledge gained for a future resource and direction for practice. A professional environment was set up for the preschool education sites. Additionally, systems were developed for partnerships between ECPAC, Regis University, community agencies, and preschools to increase healthcare access for children. The referral system also has the potential to be

implemented throughout the county in the future, increasing the capacity and use of medical homes. This outcome would contribute mostly to society; however, it will also aid the families involved by helping them find a medical home for their child's health care needs. Additionally, other perceived benefits of the project included attaching each child to a PCMH, which in turn will reduce low levels of health care utilization and access and will increase preventive care. The PCMH is seen as a vehicle for providing consistent primary care and controlling cost savings (Fontaine, Flottemesch, Solberg, & Asche, 2011). In one study, health plan enrollees that established a PCMH to provide their primary care had fewer primary care visits and specialty care visits and lower costs for professional fees than those who fragmented their care across clinics or medical groups (Fontaine et al.). Moreover, increasing preventive care may improve efficiency of healthcare dollars by decreasing acute visits to the ED and by decreasing specialist visits and acute visits. According to Stephens and Ledlow (2010), "EDs across the nation are in crisis because of the perfect storm caused by the immense uncompensated care burden of the uninsured, lower reimbursements, and government regulation" (p. 101). As a result, emergency care will be increasingly difficult to access unless the crisis is addressed.

The project leaders estimated the referral system reached 900 children in Adams County. The preschool directors received approximately ten hours each of health education aid in finding healthcare access for children enrolled in their schools. Ten centers were involved with education at a rate of \$25 an hour. Approximately \$2,500 of training was provided to the schools. Additionally, parent education awareness about healthcare access was provided for 900 families at a rate of \$10 per hour. Furthermore,

systems for partnerships were developed for CHS, KIND, and Community Reach estimating approximately ten hours at each site at a rate of \$25 per hour. Approximately \$750 of agency education was provided through the referral system. Approximately \$9,000 of parent education was provided. If the five children referred to the PCMH, sought preventive care rather than ED care, approximately \$1,000 healthcare dollars would be saved. Furthermore, with five children, approximately \$100 per child could be saved in unnecessary medical costs per year. The cost savings amounted to \$500 for each family referred to the PCMH. Additionally, each of the 900 families benefited from time and money saved looking for a provider and scheduling appointments. Approximately \$10 per family was saved in time and money with the referral system, estimating a total of \$9,000 in savings. Finally, benefits from access to a PCMH that can not be quantified included improved health outcomes such as improved rates of infant mortality, low birth weight, life expectancy, and self-rated health (Shi & Singh, 2011). Previous studies have shown that countries with well-developed primary care systems have lower healthcare costs, increased satisfaction, and better health outcomes than those countries without primary care access (Shi & Singh). Total benefits were estimated to be \$22,750. Additionally, \$3,100 was not used from the grant. Total net benefits of the project were estimated to be \$25,850 (see Appendix F).

Mission and Vision Statement

A mission statement describes the unique attributes of an organization including its current product and service offerings (Kruschke & Stoeckel, 2011). Furthermore, Kruschke and Stoeckel defined a mission statement as "a sentence or short paragraph which is written to reflect the organization's core purpose, identity, values, and principle

business aims" (p. 12). The mission of the preschool primary prevention project was to provide a referral and tracking system in low-income Adams County preschools that increases access to preventive care. The core purpose of the preschool primary prevention project was to increase access to medical care and to increase preventive care exams. The project focused on low-income children in Adams County that were either enrolled or eligible for Medicaid and CHP+.

A vision statement describes markets to be pursued, future products, and what the organization is striving to become (Kruschke & Stoeckel, 2011). Furthermore, Kruschke and Stoeckel defined a vision statement as "a sentence or short paragraph providing a broad, inspirational, image of the future containing details of the future about where the organization is going" (p. 12). The vision of the preschool primary prevention project was to ensure every child in the study preschool program in Adams County received access to comprehensive, preventive care from a PCMH through the centralized referral and tracking system. Additionally, the vision of the project was to expand the referral and tracking system throughout the state to decrease ED use and unnecessary medical expenses.

Goals

Zaccagnini and White (2011) defined goals as "broad statements that identify future outcomes, provide overarching direction to the project, and point to the expected outcomes of the project" (p. 468). The primary goal of the preschool primary prevention project was to increase access to and promotion of coordinated care through a PCMH approach. Furthermore, the project aimed to increase coordinated, comprehensive, and preventive health and education in a culturally competent manner. Two additional goals

of the preschool primary prevention project were to increase identification of Medicaid and CHP+ eligible families and support them through the enrollment process. Increasing longer periods of continuous Medicaid and CHP+ enrollment was also a goal of the project.

Objectives

Zaccagnini and White (2011) defined objectives as "clear, realistic, specific, measurable, and time-limited statements of the actions which, when completed, will move the project towards its goals" (p. 468). The objectives must be specific to the target population, must be measurable, must be attainable and realistic, and must be timely to get the project accomplished within the designated time frame (Zaccagnini & White). Furthermore, two types of objectives exist including outcome objectives and process objectives.

Outcome objectives address the outcomes of the project in a given time frame (Zaccagnini & White, 2011). The first outcome objective of the preschool primary prevention project included measuring the impact of preventive care access through a PCMH approach. Objective one stated by the end of December 2011, there will be an increase in the number of children ages one to five in the study group who received access to a PCMH through the centralized referral process. Progress was measured over a four month time period from September 2011 through December 2011 (see Appendix E). Quantifiable measures included the numbers of children who received a referral to a PCMH. Baselines were determined by the number of children in the preschool study group that did not previously have a health care provider.

Process objectives are the activities needed to accomplish the goals of the project (Zaccagnini & White, 2011). The first process objective to accomplish objective one was to secure a potential PCMH and best practices to implement the referral system. CHS was identified in January 2011. The second step involved determining the scale and structure of the project. This step occurred in February 2011. The next step was to implement the project plans in the study preschools and at CHS. Management staff at the study sites completed training on policies and procedures involved in implementing the referral system. This step was completed in July 2011 and the project was implemented in September 2011. Next, tracking procedures were determined for monitoring baseline healthcare practices that were used to determine practices after the referral system was initiated. The tracking system monitored how many children each of the preschools were referring out to a specified agency and which agency was utilized. The final step involved collecting data from participating agencies and obtaining baseline data. Data collection began in September 2011 and was finalized in March 2012 (see Appendix E).

Outcome objective two of the preschool primary prevention project involved measuring the impact of preventive care exams through a PCMH approach. Objective two stated by the end of December 2011, there will be an increase in the number of children ages one to five, in the study group, who received preventive care exams in a PCMH through the centralized referral process. Progress was measured over a four month time period from September 2011 through December 2011. Quantifiable measures included the numbers of children who received a preventive care exam in a PCMH. Baselines were determined by the number of children in the preschool study

groups, who were not up to date on their annual physicals required by the state for preschool (see Appendix E).

Process objectives for objective two were very similar to objective one. In January 2011, partnership commitments were secured. In July 2011, the process of joint reflection and planning were established between planning and implementation partners. Management staff at the study sites completed training on policies and procedures involved in implementing the referral system. At this time a method and schedule for communication was established and continued refinement of the project became routine. Additionally, questionnaires were sent to the preschool directors to determine baseline demographics from each school. The questionnaires asked for the total number of children enrolled in the preschool, ages of children, percentage of children receiving free or reduced lunch, number of children with immunization waivers, number of children with physicals that are up to date in the center, and number of children with immunizations that are up to date in the center. Questionnaires were distributed at the end of September 2011. All baseline data was collected from ten of the 13 preschools on November 1, 2011. The data was utilized to compare baseline data from the preschools and annual physicals to data obtained about the number of preventive care exams completed at CHS, after the referral system was implemented. Final data was collected by March 10, 2012 (see Appendix E).

Logic Model

A logic model links the relationships among resources, activities, outputs, outcomes, and impacts of a project or program (Zaccagnini & White, 2011). The logic model is a systematic picture representing the key components of a project including the

evaluation of outcomes. Inputs are resources needed to implement the project including personnel, finances, and facilities (Zaccagnini & White). Zaccagnini and White described activities as what the project does to achieve the outcomes. Outputs are the results of the project including the number of participants, the number of hours of instruction, the number of meetings, participation rates, and the number of hours of service provided (Zaccagnini & White). Furthermore, the authors defined outcomes as short-term, long-term, or impact outcomes of the project. Short-term outcomes measure the knowledge or skill, while long-term outcomes measure behavior changes. Finally, impact outcomes are the changes as a result of the project (Zaccagnini & White).

Resources or inputs that were needed for the preschool primary prevention project included school and medical facilities, program staff, and a referral and tracking system. A preschool study group of 13 preschools in Adams County that were associated with ECPAC were utilized. Additionally, CHS served as the PCMH that addressed affordability, accessibility, acceptability, availability, and accommodation. ECPAC served as the home office for the project development. Program staff involved in the project were preschool secretaries, preschool directors, the CHS medical director and outreach director, ECPAC director and Partnerships for Healthy Communities director. A majority of the project was funded by a grant from Mile High United Way.

Activities for the preschool primary prevention project included development of the health questionnaire and centralized referral and tracking system to obtain baseline data. Other activities included designing an educational training session for preschool directors and facilities involved in the referral process. PowerPoint presentations were designed for education and training about the policies and procedures of the referral

system. Referral packets were also distributed to preschool directors that contained information about all referral agencies involved.

Outputs or immediate results of the preschool primary prevention project were considered for children and their families and preschool directors. One thousand referrals were expected to go out in 13 preschools in Adams County. Expected outputs included 900 families will have taken the health questionnaire included in the preschool enrollment packets. Furthermore, all families in the study preschool programs will be aware of how to access a medical facility if needed. A final outcome was all 13 preschool directors will be aware of the program and will be confidently able to assist families in the referral process.

Outcomes of the preschool primary prevention project included short-term and long-term goals of the project. Short term goals were an increase in the number of age appropriate exams in the study group from baseline. Age appropriate measures were a well child exam, blood pressure, weight, height, body mass index, head circumference (as appropriate), vision screening, hearing screening, developmental assessment, anticipatory guidance, and counseling on safety behaviors. Another project outcome included increasing the number of required immunizations from baseline. Additional short term goals were improving access to healthcare by referring each child to a PCMH. Long-term goals included improving cost effectiveness of healthcare by decreasing emergency department use and unnecessary medical care. Long-term behavioral outcomes included improving parent's knowledge of preventive care for their children.

Impact outcomes expected from the preschool primary prevention project included an observed increase in preventive care exams and a decrease in unnecessary

ED visits. Increasing access to a PCMH is a second impact outcome of the project. A long-term impact outcome involves implementing a centralized referral and tracking system state-wide and in public preschools in Adams County (see Appendix B).

Population

A community needs assessment was completed to identify the population affected by the problem (Zaccagnini & White, 2011). The target population for the population assessment was Adams County families with children ages one to five, focusing primarily on low-income children that were living at or below the federal poverty level and who were also eligible to receive Medicaid and CHP+. The estimated sampling frame was 900 families.

In 2009, approximately 35,065 children lived in the ECPAC service area (Adams County Colorado, 2009). Assuming that the growth rate in children ages zero to five is similar to that of children ages six to 12, in the free school lunch program, the overall growth in the number of children living at or below 130 percent of poverty was 87 percent (Adams County Colorado). Approximately 23.5 percent of preschool age children in Adams County live in poverty. The total population of Adams County in 2010 was approximately 441,603 people (Census Data for Colorado, 2010). The total population in Adams County grew 21.37 percent from 2000-2010 (Census Data for Colorado). In 2009 there were 101,067 children in Adams County under the age of fourteen (Colorado Department of Public Health and Environment-Health Statistics, 2009). In 2009, the population of Adams County was younger in age in comparison to the State of Colorado general population. In 2009, the regional health profile for Adams County showed 7,732 children were under the age of one year (CDPHE). Approximately

101,067 children were in the age group of one to 14 and 32,163 children were in the age group of 15 to 19 (CDPHE). The Colorado census report estimated approximately 8.8 percent of the Adams County population was under the age of five, 28.4 percent under the age of 18, and 10.0 percent of the total population was older than 65 (Census Data for Colorado, 2010). In 2007 approximately 50.8 percent of the population was male and 49.2 percent was female (U.S. Census Bureau, 2005-2009).

In 2009, of the 441,603 people living in Adams County, 56 percent identified themselves as white, 33.5 percent identified themselves as Hispanic or Latino, 4.2 percent as Black or African American, 4.2 percent as Asian American or Pacific Islander, and 2.2 percent as American Indian and Alaska Native (U.S. Census Bureau, 2005-2009). In 2009, of the total Colorado population of 5,029,126, 71.7 percent identified themselves as white, 19.7 percent identified themselves as Hispanic or Latino, 4.1 percent as Black or African American, 2.6 percent as Asian American or Pacific Islander, and 1.1 percent as American Indian and Alaska Native (CDPHE, 2009). Approximately 12.5 percent of the population in Adams County was foreign born and speak a language other than English in ages five years and older (US Census Bureau). The proportion of households in which English was the primary language dropped from 2000 to 2007 and the proportion of households in which Spanish was the primary language rose substantially (Adams County Colorado, 2009).

In 2008, the median household income in Adams County was \$56,601 while the median household income in Colorado was \$57,184 (U.S. Census Bureau, 2005-2009). The poverty level in Adams County was 13.8 percent and in Colorado was 12.9 percent (Adams County Colorado, 2009). The percentage of children under the age of five living

below the poverty level was 19.9 percent and 9.1 percent of individuals above the age of 65 are living below the poverty level (U.S. Census Bureau). Children under the age of 18 were more likely to live below the poverty threshold, and Adams County had a poverty rate near the national average but higher than Colorado (Adams County Colorado).

Setting

Adams County is the fifth largest county in Colorado. Nine cities are incorporated within the boundaries of Adams County including Arvada, Aurora, Bennett, Brighton, Commerce City, Federal Heights, Lochbuie, Northglenn, Thornton, and Westminster (Adams County Colorado, 2009). Adams County encompasses 1,183 square miles and the population per square mile is 374 (Adams County Colorado). The climate is mild in Adams County and is similar to the rest of Colorado. Agriculture is a large part of Adams County history and present day life. The abundance of agriculture industry in the 1900s brought many Japanese, Russian, and German people to Adams County and thus helped to create the diverse area Adams County is now (Wagner, 2002). Today agriculture continues to be an important part of the Adams County economy.

Adams County is very large with its population of 441,063 spreading across 1,186 square miles ranging from sparsely populated, rural, agricultural areas to urban centers which are densely populated (Adams County Colorado, 2009). The county contains five major medical centers within the municipality. Distance and limited access to public transportation are a major barrier in obtaining health care services in Adams County.

Methodology and Measurement

According to Cullen (2011), a descriptive design includes selecting an appropriate sample, planning and developing instrumentation, administering the instruments, data

collection, and analyzing the findings. An exploratory, descriptive, design was used; data was collected on a written survey given to families at the preschool site in a handwritten survey format in February 2012. A referral system was designed to initially recruit a study group to discover how the medical home affects access to preventive care and preventive care exams. The tracking system was designed to measure the effects of the medical home approach. The referral and tracking system were the independent variables. The referral system was initiated with a parent survey that was included in the enrollment packets and went out to 900 families in Adams County. The director of the preschools identified key issues from the survey and had a universal script as how to proceed with the family; directly referring the family for medical, dental, mental health services, or Medicaid enrollment services as deemed necessary by the survey. The initial survey encompassed questions about health care coverage, health services, and oral health. The questions in the initial survey were:

1. Has your child had a break in health coverage? Why was there a break?
2. Do you know how to get health coverage support?
3. Does your child have a health care provider he sees regularly?
4. Do you need help finding a clinic/provider?
5. Has your child seen a dentist in the last year?
6. Do you need help finding a dentist for your child?

The tracking system was initiated to discover medical home utilization and its effects on preventive care. The tracking system was initiated with CHS once the child was referred from the survey. Tracking questions also included the specific preschool, the number of children referred to an agency in the school, and the type of agency.

Baseline data was obtained regarding the number of children in the preschools, children that were up to date on immunizations and required age appropriate well child exams, children that waived immunizations, and percentage of children receiving free or reduced cost lunch in the center. Tracking questions to obtain baseline data were all based on nominal measurements and were collected from ten preschools in Adams County.

A parent survey was then distributed to the families that indicated a need for medical assistance on the initial survey. This knowledge tool measured preventive baseline data and demographic data about the child before they were involved in the referral system (Appendix D). Additionally, a survey was given to the provider examining the child at their initial visit to CHS. The provider survey contained additional information about the type of preventive care the child was given in the clinic and whether anticipatory guidance and developmental screening were assessed (Appendix D). The provider survey provided information about the child's preventive care after being involved in the preschool referral system.

Extraneous variables also affected the referral and tracking system. Confounding factors that may have influenced health care utilization included language barriers, cultural barriers, perceived benefits of regular care, perceptions of previous providers, prior experiences in health care, insurance status, and accessibility to health care. These extraneous variables were difficult to control as families had preconceived ideas about healthcare before entering the referral system.

The capstone project most closely assessed the outcome measure of resource utilization; did the referral system actually work to refer children to a medical home and was the medical home utilized for preventive care? Other outcomes that were measured

were the rate of preventive care exams that were performed at the PCMH through the referral process. Romaine and Bell (2010) noted "well-child care is recommended for all children, and immunizations, physical exams, developmental screenings, and health-related counseling and education (anticipatory guidance), are integral components of the care, yet rates of receipt of anticipatory guidance are particularly low" (p. 338). The capstone project proposes to explore whether a more systematic, comprehensive approach to the delivery of health services influences the receipt of these services in the study population. The potential, specific preventive services to be determined for the project included a well child exam, weight, height, blood pressure, body mass index, head circumference, vision screening, hearing screening, developmental assessment, anticipatory guidance, and safety issues. Additionally, the final outcome to be measured was whether the referral system increased the number of children who received a PCMH approach through the referral system.

The population in the capstone project involved at-risk children and their families. At risk children are defined as at or below 200% federal poverty level and those who are eligible for Medicaid and CHP+. A majority of the population were Hispanic with Spanish being their primary language. Also, some of the population consisted of undocumented immigrants. Hicks (2010a) in Collaborative Institutional Training Initiative (CITI) defined vulnerable populations as pregnant women, fetuses, neonates (Subpart B); prisoners (Subpart C); and children (Subpart D). The population of study was defined as vulnerable. The study group consisted of children and families that identified a health services need from the enrollment survey. The study design involved a parent survey to assess the health status of the child in the study for baseline data.

Institutional Review Board (IRB) approval was obtained from Regis University (Appendix G). IRB approval was not required at CHS, however a letter of support was received (Appendix I). The capstone project was approved exempt status of "research involving survey procedures, interview procedures, or observation of public behavior providing that any disclosure of identifiable information outside the research setting would not place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation" (Hicks, 2010b, p. 4). However, the clause additionally states that if Subpart D (children) applies, surveys with children cannot be exempt (Hicks, 2010b). Consequently, the parents of the children were surveyed in the capstone project. Informed consents were attached to the first page of the survey. Moreover, CITI training was completed for children and vulnerable populations (Appendix H). Other concerns with the capstone project were the disclosure of identifiable information revealing the immigration status of a child and family thus leading to legal action. In this case, identifiers were destroyed and confidentiality was protected by anonymizing data and coding data by numbers received rather than any other identifying information.

Protection of Human Rights

The U.S. Department of Health and Human Services (USDHHS, 1979) defined respect for persons as "involving two ethical convictions: first, that individuals should be treated as autonomous agents, and second, that persons with diminished autonomy are entitled to protection" (p. 2). This means persons entering a research study should enter voluntarily with adequate information (USDHHS). An informed consent was initiated with the family after they were identified as needing medical assistance for their children

(Appendix D). According to Cullen (2011), the informed consent should include an introduction to research activities, description of risks and discomforts, benefits, disclosure of alternatives, anonymity and confidentiality, offer to answer questions, compensation, non-coercive disclaimer, and an option to withdraw. The consent in the study included verbiage on a release of information. The parent agreed to consent to a release of their health information to the health care clinic so that the clinic may contact the family and can release the information back to the researcher. The release of information from the medical clinic back to the researcher involved a Health Insurance Portability and Accountability Act (HIPPA) release from the medical clinic. All consent forms were translated into Spanish and English. The survey was at the sixth grade reading level. Preschool directors were available to read the survey questions if families were illiterate. The medical outreach director at CHS was available to assist with the verbiage and translations for the consent forms as needed.

The USDHHS (1979) defined beneficence as "persons that are treated in an ethical manner not only by respecting their decisions and protecting them from harm, but also by making efforts to secure their well-being" (p. 2). The benefits of the research project will lie mostly in the importance of the knowledge gained for a future resource and direction for practice. If the proposed hypothesis is true and the referral system does increase preventive exams in the medical home, the referral system may be implemented throughout the county and the use of medical homes may increase. This outcome would contribute mostly to society, but also would aid the families involved by helping them find a medical home for their child's health care needs (Arwood & Panicker, 2010). Sensitive information was not included in the surveys that had the potential to cause

psychological harm. The primary source of risk was the possible disclosure of immigration status through the identifiable data, however all identifiable data was destroyed.

The USDHHS (1979) stated "the principle of justice gives rise to moral requirements that there be fair procedures or outcomes in the selection of research subjects" (p. 5). The project was specifically studying preschool children ages one to five within Adams County as this was criteria stated by the health integration grant. The referral system was initiated in 13 area preschools associated with ECPAC. These included some private schools and some public preschools. Every family involved received the survey with the required enrollment packet for the school year.

Instrumentation

The knowledge instrument used in the preschool primary prevention project was developed by the researcher as previously used instruments for this type of study were non-existent in the literature (Appendix D). The instrument included a Guttman scale of yes or no questions and demographic information of the study population. Kane and Radosevich (2011) stated the researcher begins with knowledge of what the study question is and how this relates to the underlying conceptual model (see Appendix C). Furthermore, establishing the usefulness of the measure is assessed by reliability and validity. Kane and Radosevich suggested "assessing reliability involves showing that a health outcomes measure produces reproducible results" (p. 63). The preschool primary prevention project survey did not have a previous measure of reliability. The parent survey tool asked a series of ten medical and preventive care questions and a series of eight demographic questions to every parent initializing a visit at CHS. The survey

intended to produce consistent results from parents showing patterns of preventive care in the past 12 months of the child's life. Validity addresses whether the instrument is measuring what it is intending to measure (Kane & Radosevich). The preschool primary prevention project survey did not have a previous measure of validity. The parent survey intended to provide content validity in that the measure was comprehensive for asking about the preventive health care measures of the child in the past 12 months. The parent survey tool does not contain criterion validity because there was not an already established measure of the impact of a referral system on preventive health care and health care access. Additionally, responsiveness is another property of a knowledge tool. The receiver operating characteristic (ROC) is a method that can be utilized to express results in terms of subjects who improve and those who do not in nominal measures (Kane & Radosevich). The ROC method could be employed in the preschool primary prevention project to discover if preventive visits and access to care were improved or were not before and after the referral system was initiated. Finally, burden and design are other characteristics of a measurement tool. Burden asks if the measurement tool is too time consuming, uncomfortable, or intrusive (Kane and Radosevich). The parent survey contains 18 questions and all answers remain anonymous. The tool asked preventive questions and is non-intrusive, therefore should not be burdensome to the patient. Design asks if the measurement tool fits the study design and questions (Kane & Radosevich). The parent survey tools asks parent's information about previous preventive care. The health outcome of interest is to measure the impact of a designed referral system upon preventive care exams.

According to Polit (2010) "power analyses involves four components including the significance criterion, power, the population effect size, and sample size" (p. 127). Furthermore, Polit suggested the first three must be known to calculate the fourth criterion, sample size. The significance criterion for the study or the alpha should be set at .05. The power is .80 because .20 is considered the standard for a Type II error. The effect size is calculated by Cohen's d or sample mean of Group I minus the sample mean of Group II divided by the standard deviation. These three values are then plugged into a power table for a specific parametric test to come up with the sample sizes needed in the control and intervention groups. According to Polit an effect size of .20 is considered small, an effect size of .50 is considered medium, and effect size of .80 is considered large. If all components are plugged into a power analysis, a sample size of 394 in each group would be considered for a small effect size, a sample size of 64 in each group would be considered for a medium effect size, and a sample size of 25 in each group would be considered for a large effect size (Polit). A sample size of 25 in the pre and post referral groups was chosen for a large effect size.

Data Collection and Procedure

Data was gathered in the study measuring healthcare access and healthcare prevention prior to the referral and tracking system implementation and post-referral and tracking system implementation. Data was collected from the families specifically asking about previous access to a PCMH and provider prior to being involved with the referral system. Data was also collected from the families prior to being involved in the referral system that asked about preventive care utilization such as up to date well child exams and immunizations. Data was then gathered post-referral implementation about the

number of referrals made to the PCMH. Additionally, data was gathered post-referral implementation about the type of preventive techniques that were performed once the child made an initial visit to the PCMH.

The data collection took place over a five month time period (September 1, 2011-March 1, 2012). Thirteen privately funded preschools in Adams County were selected for the study. Baseline data about the preschool population was collected from ten of the 13 preschools during the initiation of the referral and tracking system. Nine hundred health screening surveys were distributed to families in Adams County in the preschools through the enrollment packs. Following the implementation of the surveys, tracking data was collected from each of the participating preschools in December 2011. Tracking data included information on the number of referrals made to the partnered community agencies and the type of referral made for each preschool. Preschool demographic data was also collected at this time. Demographic data included information on the ages of children attending the preschool, the number of children receiving free or reduced cost lunch, immunization status, and physical exam status. Personal data from families was collected at the end of the final phase of implementation. Data collected included information about prior access to the healthcare system, prior preventive care utilization patterns, and child demographic patterns. Finally, when the implementation phase came to a close, data was collected from CHS about the type of exam that was performed in the clinic upon the initial visit. Qualitative data was collected at the final phase of the project from each of the preschool directors to inform the project about future implications for practice (Appendix D).

Project Findings and Results

Findings

A total of 900 families received the initial parent survey tool provided in the enrollment packets in ten private preschools in Adams County. The initial surveys identified a need for medical, dental, or mental healthcare assistance. A total of 126 (14%) surveys were returned from the families to the preschool directors indicating a need for further healthcare assistance. Five children (4%) out of the 126 surveys were identified as needing medical referral assistance. However, three out of the five children were no longer authorized for the Adams County Child Care Assistance Program and were dis-enrolled from the preschools during the referral system project. Consequently, only two children indicated a need for medical assistance (1.6%). Additionally, 14 children (11.1%) out of the 126 indicated a need for dental assistance and 11 children

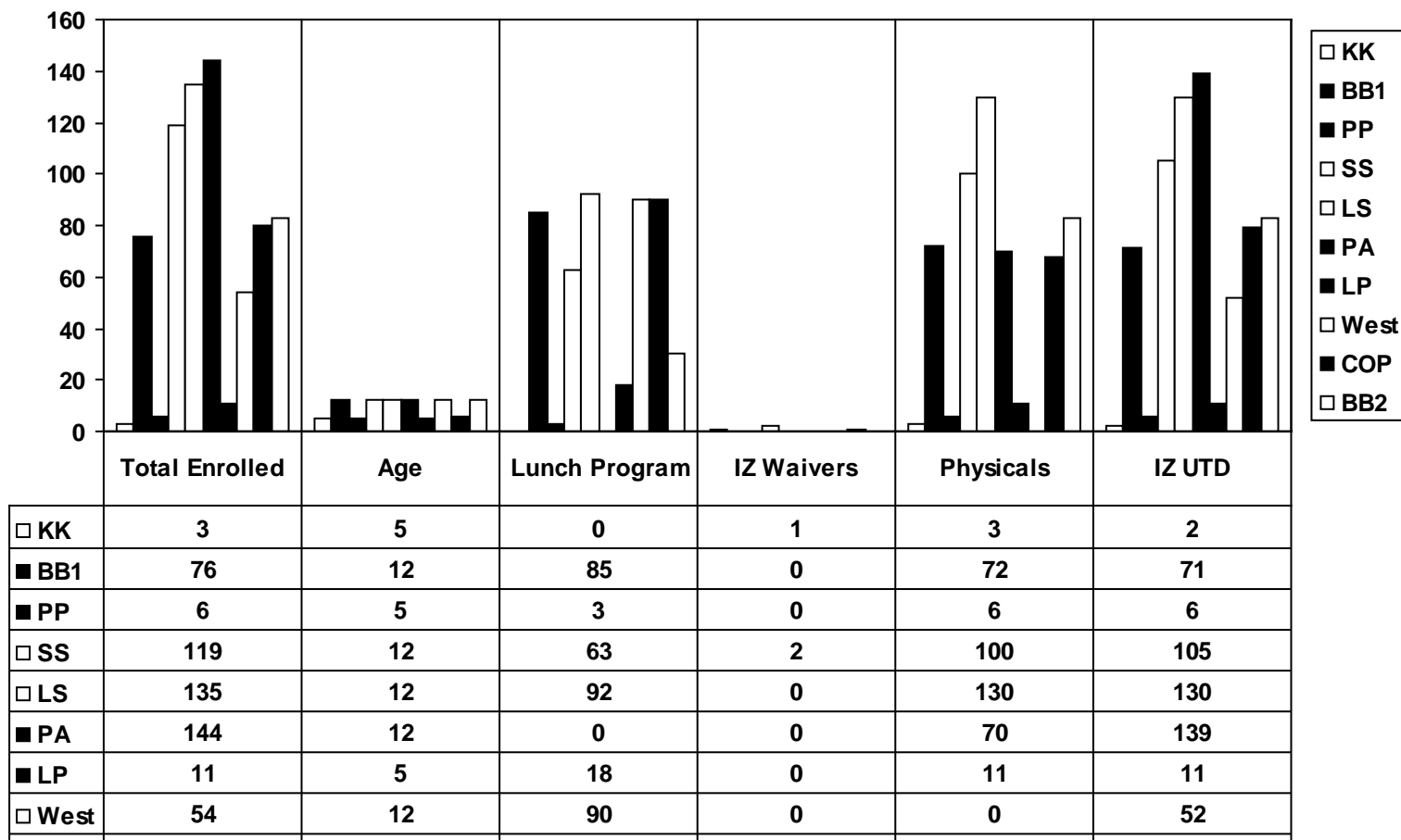


Figure 1 Preschool Demographic Data. The chart represents the demographic data of each preschool. Each preschool is represented by their initials. Total enrolled is the total number of children in the preschool. Age is represented as the oldest age the preschool admits. Lunch program is the number of children in the preschool on a free or reduced cost state program. IZ waivers is represented as the number of immunization requirements that were waived by the parent. Physicals represent up to date well child exams. IZ UTD represents the number of children in the preschool that are up to date on required immunizations.

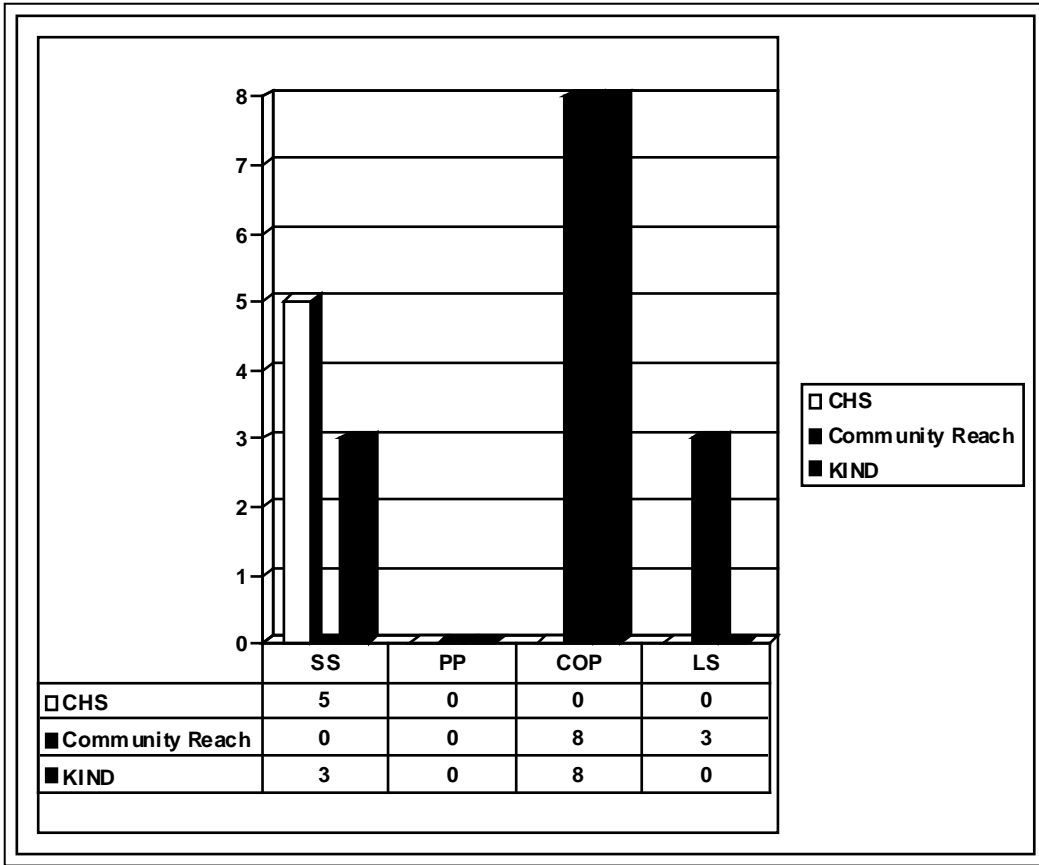


Figure 2 Preschool Tracking Data. The graph measures the number of referrals made by each preschool. Preschools are represented by their initials. CHS is the medical agency called Community Health Services. Community Reach is the mental health agency. KIND is the dental agency called Kids In Need of Dentistry.

(8.7%) out of 126 indicated a need for mental health assistance. Out of the 126 referrals, 96 families (76.2%) indicated they did not need healthcare assistance at this time.

Only 1.6 percent of children in the ten private preschools indicated a need for medical referral assistance. However, both of the children's parents signed the ECPAC release, filled out the parent survey, and were referred to CHS for further assistance. CHS did try to contact the family of the two children to schedule an initial appointment; however the family did not return the phone calls. If the family had followed through with an appointment, a provider survey would have been completed at CHS. The provider survey detailed the type of exam performed, preventive health techniques performed, and anticipatory guidance and developmental screening performed at the time of the visit.

Results

Demographic data was collected from each preschool during the implementation phase of the referral project (Figure 1). The mean number of children enrolled in the centers was 71 children. The most frequent age ranges for children in the ten centers was six weeks to 12 years of age. Approximately 47 percent of children in the ten centers received free or reduced cost lunch. Only four children out of 708 (.005%) children had immunization waivers. Approximately 543 children (76.7%) out of 708 were up to date on their physicals and 678 children (95.8%) out of 708 were current on their immunization status.

Tracking data was collected from each preschool during the implementation phase of the referral project (Figure 2). Four out of the ten preschools (40%) returned

information about the number of requests made for medical, dental, or mental health assistance. Step by Step (SS) learning center had five requests for medical assistance (15.2%), six requests for dental assistance (18.2%), and zero requests for mental health assistance out of 33 total requests. Furthermore, the center had 25 surveys (75.8%) returned that indicated the family did not need any type of assistance. Pitter Patter (PP) learning center had zero requests for medical, dental, or mental health assistance out of the six surveys that were returned, but had one request for Child Find developmental services. Children's Outreach Project (COP) learning center had zero requests for medical assistance out of eight total requests. However, they had eight requests for dental assistance (100%) and eight requests (100%) for mental health assistance. Little Sailors (LS) learning center had zero requests for medical or dental assistance but had three requests (4.3%) for mental health assistance out of 69 total surveys. The rest of the returned surveys indicated the families did not need assistance with any service.

Demographic questions were identified on the parent survey tool. Both of the children that were referred to CHS were male. The participants were ages one and three. The primary language spoken at home was English. Both participants were enrolled in Medicaid or CHP+. Both children were of Caucasian decent. High school graduation was the highest level of education completed for both parents.

Quantifiable measures for healthcare access included an increase in the number of children who received a referral to a PCMH. Baselines were determined by the number of children in the study that did not previously have a healthcare provider before entering into the referral system. Pre-referral access was measured by questions on the parent survey. Two of the children out of two responded they did not currently have a personal

doctor or nurse. When asked where they take their child when he or she is sick, responses from both children were the emergency room or urgent care. Post-referral access was measured by the number of children that were referred to the PCMH after being involved with the referral and tracking system. Both of the children (100%) were referred to the PCMH from the preschool. These results confirm that the referral and tracking system did improve access to a healthcare provider and PCMH.

Quantifiable measures for preventive care included an increase in the number of children who received a preventive care exam in a PCMH. Baselines were determined by the number of children involved in the referral system that were not up to date on their annual physicals required by the state of Colorado for entry into preschool. Pre-referral prevention was measured by questions on the parent survey tool. Two children out of the two that were surveyed were up to date on their annual physicals required by the state of Colorado for entry into preschool and required immunizations. However, responses from both the parents of both children indicated neither had received a health screening in the past 12 months including a height check, weight check, blood pressure, body mass index, or vision screening. Additionally, responses from the parents of both children indicated neither had received a developmental assessment in the past 12 months including a check for age appropriate activities like gross and fine motor skills. Finally, responses from the parents both children indicated neither child had received teaching from a healthcare professional in the past 12 months regarding diet, exercise, secondhand smoke, regular dental check ups, bicycle helmet use, safety seat use, booster seat use, or seatbelt use. Post-referral prevention was measured by the number of children that received a preventive care exam indicated by the provider survey at the PCMH. Currently, neither

child has been scheduled for an appointment or has shown up for an exam at the PCMH. These results confirm that both children were already up to date on preventive care required by the State of Colorado for entry into preschool. However, these children had not received other types of preventive care techniques such as basic health screenings, developmental screenings, and anticipatory guidance. Although the referral and tracking system in this study did not show improvement in preventive care exams or up to date immunization rates; the results confirm other preventive health techniques are lacking and could be improved through the referral and tracking system. The results confirm regular health screenings, developmental assessments, and anticipatory guidance are not being conducted on a yearly basis.

Limitations, Recommendations, and Implications for Change

Limitations

There were several limitations of the study that were related to the complexity of the referral and tracking system. The first limitation was related to the return rate of the initial survey questions. The return rate of the initial survey questions was only 14 percent. The low return rate could be related to the way the surveys were distributed in the enrollment packets. Preschool director surveys indicated parents already feel inundated with paperwork during the enrollment period. The initial surveys may have led the parents to feel overwhelmed with more paperwork. The parents may have felt the initial survey was optional at the time and decided not to fill it out or return the survey. An additional limitation of the referral system was contacting the parents for follow up after they indicated an initial medical, dental, or mental health need in the enrollment packets. Preschool director surveys indicated there was a lack of staff and time and

incentive to call the parents to return to the center to sign the ECPAC release forms so the referral could be initiated. There was also a lack of staff time to contact the parents that indicated a medical need to complete the parent questionnaire. Additionally, preschool director surveys indicated there may be trust issues between the center and parents, parents may be ashamed to admit they have a need, or there may be a lack of interest on the parent's part for obtaining a medical, dental, or mental health referral. Finally, the centers with lower enrollment rates indicated they have a low turnover rate, so they can easily identify which children need healthcare assistance without the referral system.

Other limitations included a lack of time to fully evaluate how the referral and tracking system affected healthcare access and preventive care. Due to the time limitations of the study, tracking families that showed up for an initial appointment at the PCMH could not be completed. Additionally, due to the time limitations of the study, tracking families in the preschools that may continue to request medical assistance can not be completed.

A final limitation of the study was the small sample size ($N = 2$) to measure healthcare access and preventive care exams through the referral and tracking system. The limitations that prohibited more parent surveys to be completed were due to a low return rate (14%) of the initial health screening surveys. Additionally, there was a very low need for medical referral assistance in this study.

Recommendations

The preschool referral and tracking system provides a framework for collaboration between the school system and the healthcare system to improve the overall well-being of the children involved. Pender's Health Promotion Model (1987) served as

an exemplar for exhibiting how preventive behaviors lead to health promotion. The referral and tracking system served as a link to increasing preventive care thus increasing health promotion in the preschool population. The preschool referral and tracking system provides pathways for families and children in Adams County to receive access to preventive healthcare through a PCMH approach. The preschool referral and tracking system provides pathways without being restrictive and adaptability of the model is a viable option. Recommendations for adapting the preschool referral and tracking system include:

1. Distribute the initial health survey questions after the parents have completed the preschool enrollment packets at an organizational meeting. Include information in the enrollment packet that describes the referral system and directions for how the family may receive further assistance if indicated.
2. Distribute the initial health survey questions, ECPAC release form, and parent survey tool as one packet so the parents do not have to return to the school to sign the release and be referred to the community partner. All processes can occur simultaneously.
3. Include in the initial budget, a position for an administrator at the school site or through ECPAC that can recognize the type of assistance required, make the referral, track the progress, and follow up with the parents if further assistance is needed. This person should also be the liaison between the school agency and healthcare agencies so each center is aware of their role in the referral system.
4. Initiate the referral and tracking system in the public school system where the turnover and need for assistance is larger. The public school population is

typically larger than the private school population and may have more gaps in access to preventive healthcare.

5. Continue the partnerships between the school system, Regis University, and KIND, CHS, and Community Reach.

Implications for Change

Further research regarding improving healthcare access and preventive care through a referral and tracking system is necessary. The Intervention Wheel (2004) emphasizes practices to improve health promotion and disease prevention in the community. Some of these practices include being involved with research and political activism. There are few research models in the literature that link a referral system in the community to a PCMH. The referral and tracking system model calls for program implementation in the context of a network of partnerships and collaborations. The model was developed by a University researcher in partnership with community agencies in response to the needs of low-income children in Adams County. The framework and activities can be replicated in other community systems intended to benefit low-income children.

Colorado must address gaps in care coordination and access for low income families and children. Further, enrolling children in Medicaid and CHP+ does not ensure continuous coverage and access to healthcare services (ECPAC, 2009). For vulnerable populations, preventive health techniques, service utilization and disease self-management are as important as medical coverage and enrollment in existing programs (Tataw, James et al., 2009). Yet, current health policy allows no reimbursement mechanism for education and nonclinical case management services needed to improve

service utilization, disease self-management, and preventive health techniques for low income urban families. Consequently, a policy proposal is needed to establish funding through public health insurance for referral and case management services to a PCMH when a family is initially enrolled and to allow for follow up services when they re-enroll in these programs. Additionally, a proposal is needed to establish funding for a referral system in all state funded preschools in Colorado to follow up on children that were not initially referred to a PCMH by Medicaid and CHP+. The proposed policy would advocate for referral activities that should be paid for by publicly funded health insurance programs given the critical role in determining health behaviors and resource utilization for low-income families. Finally, a proposal is needed that includes service linkage and case management that is a standard part of practice not only for public insurance programs, but also for any pediatric providers in the community that serve low income children.

The concept of the medical home model of care has grown over the past few decades. The care model involves coordination; consumer involvement and education; multidisciplinary teams; and systematic application of best practices (Stille et al., 2010). More research is needed to discover the outcomes of linking children in a school system to medical homes. Additionally, more research is needed to discover what role the medical home plays in improving access to healthcare and preventive care through a coordinated community approach.

In summary, a referral and tracking system implemented in the schools that links children to a PCMH, is an essential avenue for healthcare access and prevention in low-income families. There is ample reason to believe that the synergy of the school systems

working with medical homes could have positive effects on child health and development. There is also ample reason to believe the referral system could improve healthcare costs by keeping children out of the ED for basic primary care. The school system and the medical home should be considered complementary collaborative partners in the provision of preventive healthcare in children. The school system and the PCMH are in optimal positions to make an enormous impact on healthcare access and prevention in the pediatric population.

References

- Adams County Colorado. (2009). *Community needs assessment final report*. Retrieved from <https://www.co.adams.co.us>
- Arwood, T., & Panicker, S. (2010). *Assessing risk in social and behavioral science*. Retrieved from Collaborative Institutional Training Initiative website: <https://www.citiprogram.org/members/learnersII/moduletext.asp>
- Census Data for Colorado. (2010). *Census 2010 Colorado*. Retrieved from <http://dola.colorado.gov>
- Child Health Survey. (2009). *Colorado Department of Public Health and Environment, Center for Health and Environmental information and statistics, health statistics section*. Retrieved from <http://www.cdphe.state.co.us/hs/mchdata/chs2009final.pdf>
- Cleverley, W. O., Song, S. H., & Cleverley, J. O. (2011). *Essentials of health care finance*. Columbus, OH: Jones and Bartlett Learning.
- Colorado Children's Healthcare Access Program. (2011). *A medical home for every child*. Retrieved from <http://www.cchap.org>
- Colorado Department of Public Health and Environment - Health Statistics (CDPHE). (2009). *Colorado health data, regional health profiles*. Retrieved from <http://www.chd.dphe.state.co.us/CHDReporting.aspx>
- Colorado Health Department Child Health Survey. (2010). *2010 Colorado child health survey*. Retrieved from <http://www.cdphe.state.co.us/hs/mchdata/CHS2010Final.pdf>

- Colorado Medical Home. (2009). *Medical home for children fact sheet*. Retrieved from www.medicalhomecolorado.org
- Cullen, P. (2011). *Human subjects implications for research-SBR*. Retrieved from http://rhchp.regis.edu/NR/NR707/week5_IRB/index.htm
- Early Childhood Partnerships of Colorado [ECPAC]. (2011). *Early Childhood Colorado Framework*. Retrieved from www.ecpac.org
- Early Childhood Partnerships of Adams County (ECPAC). (2009). *Health integration narrative*. Retrieved from www.ecpac.org
- Ferrante, J. M., Balasubramanian, B. A., Hudson, S. V., & Crabtree, B. F. (2010). Principles of the patient-centered medical home and preventive services delivery. *Annals of Family Medicine*, 8(2), 108-116.
- Fontaine, P., Flottemesche, T. J., Solberg, L. I., & Asche, S. E. (2011). Is consistent primary care within a patient-centered medical home related to utilization patterns and costs? *Journal of Ambulatory Care Management*, 34(1), 10-19.
- Hicks, L. (2010a). *Informed consent-SBR*. Retrieved from Collaborative Institutional Training Initiative website: <https://www.citiprogram.org/members/learnersII/moduletext.asp>
- Hicks, L. (2010b). *Privacy and confidentiality-SBR*. Retrieved from Collaborative Institutional Training website: <https://www.citiprogram.org/members/learnersII/modultetext.asp>
- Kane, R. L., & Radosevich, D. M. (2011). *Conducting health outcomes research*. Sudbury, MA: Jones & Bartlett Learning.

- Keller, L. O., Strohschein, S., Schaffer, M. A., & Lia-Hoagberg, B. (2004). Population-based public health interventions: Practice-based and evidence-supported. Part I. *Public Health Nursing, 21*(5), 453-468.
- Kids Count Colorado. (2011). *2011 Kids count in Colorado: Colorado children's campaign*. Retrieved from <http://www.coloradokids.org>
- Kruschke, C., & Stoeckel, P. (2011). The economics of healthcare, *DNP finance module six*. Regis University. Denver, CO.
- Nelson, C. S., Tandon, S. D., Duggan, A. K., & Serwint, J. R. (2009). Communication between key stakeholders within a medical home: A qualitative study. *Clinical Pediatrics, 48*(3), 252-262.
- Pender, N. J. (1996). *Health promotion in nursing practice* (3rd ed.). Stamford, CT: Appleton and Lange.
- Polit, D. F. (2010). *Statistics and data analysis for nursing research* (2nd ed.). Upper Saddle River, NJ: Pearson Education.
- Romaire, M. A., & Bell, J. F. (2010). The medical home, preventive care screenings, and counseling for children: Evidence from the medical expenditure panel survey. *Academic Pediatrics, 10*(5), 338-345.
- Shi, L., & Singh, D. (2011). *The nation's health* (8th ed.). Sudbury, MA: Jones and Bartlett Learning.
- Silow-Carroll, S., & Bitterman, J. (2010). *Colorado children's healthcare access program: Helping pediatric practices become medical homes for low-income children*. Retrieved from The Commonwealth Fund website: www.commonwealthfund.org

- Stephens, J. H., & Ledlow, G. R. (2010). Real healthcare reform: Focus on primary care access. *Hospital Topics*, 88(4), 98-106.
- Stille, C., Turchi, R. M., Antonelli, R., Cabana, M. D., Cheng, T. L., Laraque, D., & Perrin, J. (2010). The family-centered medical home: Specific considerations for child health research and policy. *Academic Pediatrics*, 10(4), 211-217.
- Strickland, B. B., Jones, J. R., Ghandour, R. M., Kogan, M. D., & Newacheck, P. W. (2011). The medical home: Health care access and impact for children and youth in the United States. *Pediatrics*, 127(4), 604-611.
- Tataw, D. B., Hejazi, S. B., Kima-Johnson, S., Rahman, L., & Bean, X. (2007). Health services utilization and improvement model for head start families. *American Journal of Health Studies*, 22(3), 148-159.
- Tataw, D. B., James, F., & Bazargan, S. (2009). The preventive health education and medical home project: A predictive and contextual model for low-income families. *Social Work in Public Health*, 24, 491-510.
- U.S. Census Bureau. (2005-2009). *American community Survey 5-Year estimates Adams County, Colorado*. Retrieved from <http://factfinder.census.gov>
- U.S. Department of Health & Human Services. (1979). *The Belmont report*. Retrieved from <http://www.hhs.gov/ohrp/policy/belmont.html>
- Wagner, A. (2002). *Adams County, Colorado: A centennial history 1902-2002*. Virginia Beach, VA: The Donning Company Publishers.
- Zaccagnini, M. E., & White, K. W. (Eds.). (2011). *The Doctor of Nursing Practice Essentials: A Model for Advanced Practice Nursing*. Sudbury, MA: Jones & Bartlett Learning.

Appendix A

Systematic Review of Literature

Systematic Review Evidence Table Format [adapted with permission from Thompson, C. (2011). Sample evidence table format for a systematic review. In J. Houser & K. S. Oman (Eds.), <i>Evidence-based practice: An implementation guide for healthcare organizations</i> (p. 155). Sudbury, MA: Jones and Bartlett.]		
Article Title and Journal	Joint Principles for the Medical Education of Physicians as Preparation for Practice in the Patient Centered Medical Home	Guidelines for Patient Centered Medical Home (PCMH) Recognition and Accreditation Programs
Author/Year	American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, American Osteopathic Association, 2010	American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, American Osteopathic Association, 2011
Database and Keywords	American Academy of Family Physicians Online, Patient-Centered Medical Home	American Academy of Family Physicians Online, Patient Centered Medical Home
Research Design	Position Statement	Position Statement
Level of Evidence	Level IV on Four tiered level of evidence (Houser & Oman, 2011)	Level IV on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The Joint Principles convened to define and set principles for the patient centered medical home (PCMH).	The purpose of the study was to assist with the development and use of accreditation programs, the AAFP, AAP, ACP and AOA offered these guidelines for the PCMH.
Population Studied/Sample Size/Criteria/ Power	Position Statement; no population, sample size, criteria or power stated.	Position Statement; no population, sample size, criteria or power stated.
Methods/Study Appraisal/ Synthesis Methods	Joint Principles defined a similar set of terms for the patient centered medical home. Joint Principles developed a mapping grid for educational sub-principles development.	Joint Principles developed key components of the PCMH, for a primary care site to be accepted for accreditation.
Primary Outcome Measures and Results	These principles were developed to guide the education of medical students, in order to provide a foundation in primary care medicine and PCMH relevant for all students, irrespective of their eventual specialty choice	Guidelines were developed for the PCMH.
Author Conclusions/ Implications of Key Findings	The current educational system lacks the necessary tools for the evaluation and the assessment of learners with regard to the education of medical students and residents in the principles of the PCMH.	The current educational system lacks the necessary tools for the evaluation and the assessment of learners with regard to the education of medical students and residents in the principles of the PCMH.
Strengths/ Limitations	Adding these components to the educational system will require additional funding.	Position statement, none stated.
Funding Source	None stated.	None stated.
Comments	None stated.	None stated.

Article Title and Journal	Building Medical Homes: Improvement Strategies in Primary Care for Children with Special Health Care Needs, Pediatrics	Improved Outcomes Associated with Medical Home Implementation in Pediatric Primary Care, Pediatrics
Author/Year	Cooley, W. C., McAllister, J. W., 2004	Cooley, W. C., McAllister, J. W., Sherrib, K., Kuhlthau, K., 2009
Database and Keywords	CINAHL, Medical Home and Care Coordination	CINAHL, Medical Home, Utilization of health care services, outcomes
Research Design	Qualitative Research	Qualitative Research
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The authors described the Center for Medical Home Improvement (CMHI) method and tools and the outcomes of their implementation.	The study tested the hypothesis that increased medical homeness in primary care practice is associated with decreased utilization of health services and increased patient satisfaction.
Population Studied/Sample Size/Criteria/ Power	Children with special health care needs (CSHCN).	43 primary care practices identified through 7 health plans in 5 states.
Methods/Study Appraisal/ Synthesis Methods	A change strategy was implemented that included improvement strategies and progressive measurement of the PCMH. The measurement tool utilized was the Medical Home Index (MHI).	Using the MHI, each practice's implementation of medical home concepts was measured. A scale of 1-100 was used with a higher score indicating better delivery of medical home services. A family caregiver survey was also developed to measure patient satisfaction. Descriptive analysis were reviewed for all returned surveys.
Primary Outcome Measures and Results	In the CMHI model, newer practice improvement teams have benefited from the earlier work and mentoring of more experienced teams. The medical home team at Exeter Pediatric Associates (Exeter, NH) kept track of the number of CSHCN identified and developed a care coordinator position. The Medical Home Team at Upper Valley Pediatrics reviewed child needs on a regular basis proactively. Dartmouth Hitchcock Plymouth Pediatrics joined with a local hospital to begin an educational series on CSHCN. Gifford Pediatrics set out to improve communication with schools about all children with chronic health conditions.	Higher MHI scores and higher sub domain scores for organizational capacity, care coordination, and chronic condition management were associated with significantly fewer hospitalizations. Higher chronic condition management scores were associated with lower emergency department use. Family survey data yielded no recognizable trends with respect to the medical home measurement.
Author Conclusions/ Implications of Key Findings	The movement toward this approach to improved health care for CSHCN reduces stress on the pediatric health care dollar, improves health outcomes and improves the quality of life for CSHCN and their families.	Reducing hospitalizations through enhanced primary care provides a potential case for new reimbursement strategies supporting medical home services such as coordination.
Strengths/ Limitations	There are three common elements that are critical to improving medical homeness found in this study: systematic identification of the practice's population of CSHCN, involvement of parent partners in the improvement process and development of the role of a practice based coordinator.	There is a need for larger studies of similar design. By using a condition-by-practice approach for 6 chronic conditions, the results can not be generalized.
Funding Source	Supported by grants from the Health Resources and Services Administration, United States Maternal Child Health Bureau, Rural Medical Home Improvement Project.	Support provided by the US Maternal and Child Health Bureau, Office of Children with Special Health Care Needs and Services Administration contract and Health Resources and Services Administration.
Comments	None stated.	None stated.

Article Title and Journal	The Role of Preschool Home-Visiting Programs in Improving Children's Developmental and Health Outcomes; Pediatrics	Coordinating Primary Health Care: An Analysis of the Outcomes of a Systematic Review, Medical Journal of Australia
Author/Year	Council on Community Pediatrics, 2009	Davies, G. P., Williams, A. M., Larsen, K., Perkins, D., Roland, M., Harris, M. F., 2008
Database and Keywords	CINAHL, Keywords: Patient Centered Medical Home Policy, Preschool Children	PubMed, Medical Home and Care Coordination
Research Design	Literature Review	Literature Review
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level IV on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The purpose of the study was to evaluate the effectiveness of home visiting programs when they are integrated with the pediatric medical home.	The purpose was to identify the types of strategy used to coordinate care within primary health care and between primary health care, health services and health related services in Australia and other countries that have comparable health systems and to describe what is known about the effectiveness. Another aim was to review the implications for health policy and practice.
Population Studied/Sample Size/Criteria/ Power	Policy Statement; no population, sample size, criteria or power stated.	Literature Review of 85 articles that were included if they involved coordination of care in the public healthcare system in Australia, Canada, New Zealand, the United Kingdom, the United States or The Netherlands.
Methods/Study Appraisal/ Synthesis Methods	Policy Statement; no methods stated.	A systematic review of literature was conducted between January 1995 and March 2006 relating to care coordination in Australia, the United States, the United Kingdom, New Zealand, Canada and The Netherlands. Consultations were made also with academic experts and policymakers
Primary Outcome Measures and Results	Little research has been performed on the linkage to home visitors to pediatric medical homes, which is an area that deserves attention. There is ample reason to believe that the synergy of home visitors working with pediatric clinicians could have positive effects on child health and development. Home visitors should be considered a complementary collaborative partner in the provision of developmental assessment and other components of well child services, especially for at risk populations.	Six types of strategy were identified at patient/provider level, falling into two groups; communication and support for providers and patients and structural arrangements to support coordination. All were associated with improved health and patient satisfaction.
Author Conclusions/ Implications of Key Findings	Home visitors can be health care advocates and improve access to providers of health care. They can be partners with pediatricians and clinicians and provide supportive services in the home. They can enhance anticipatory guidance in the home.	Policy and service developments should encourage comprehensive approaches across the full range of strategies, in order to maximize health and patient satisfaction. Structuring relationships between providers and between providers and patients (e.g.. Case management, multidisciplinary teams) warrants particular attention.
Strengths/ Limitations	Policy statement, none stated.	Literature review, none stated.
Funding Source	None stated.	Funded by an Australian Primary Health Research Institute Stream 4 grant.
Comments	None stated.	None stated.

Article Title and Journal	Principles of the Patient Centered Medical Home and Preventive Services Delivery, Annals of Family Medicine*	Translating the Patient Navigator Approach to Meet the Needs of Primary Care, Journal of the American Board of Family Medicine
Author/Year	Ferrante, J.M., Balasubramanian, B. A., Hudson, S. V., Crabtree, B. F., 2010	Ferrante, J. M., Cohen, D. J., Crosson, J. G., 2010
Database and Keywords	Academic Search Premier, Patient Centered Medical Home and Preventive Care	Science Direct, Medical Home, Delivery of Health Care and Access to Care
Research Design	Cross-sectional/Correlational design	Cross Case Comparative
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	Limited research exists examining principles of the patient centered medical home and improved outcomes. The study examined whether PCMH principles are associated with the receipt of preventive services.	Goals of this qualitative evaluation were to elicit insights into the process of establishing patient navigator (PN) services; to understand the barriers and facilitators to PN use in the primary care setting; and to gain an in-depth understanding of patient and physician experiences with PN services.
Population Studied/Sample Size/Criteria/ Power	Chart audits of 24 primary care offices.	75, mostly female elderly patients.
Methods/Study Appraisal/ Synthesis Methods	A cross-sectional analysis was performed using baseline patient and practice member surveys and chart audits from a quality improvement trial. Association of PCMH principles with preventive services was examined using hierarchical linear modeling.	This study was a cross-case comparative analysis of 4 community practices that implemented patient navigation (services to help patients navigate the complex and fragmented US health care system and coordinating care with a PCMH). Project meeting notes, PN activity logs and debriefings, physician interviews and patient/family member interviews were analyzed using a grounded approach.
Primary Outcome Measures and Results	Higher global PCMH scores were associated with receipt of preventive services. Having referral systems to link patients to community programs for preventive counseling and use of clinical decision support tools were associated with receipt of preventive services.	75 Females received navigation services from a social worker. The PN helped patients receive social services and navigate health coverage and complex referrals. Patients found PN services to be helpful and physicians viewed the PN as someone carrying out services that the practice was not previously doing.
Author Conclusions/ Implications of Key Findings	Relationship centered aspects of PCMH are more highly correlated with preventive services delivery in community primary care practices than are information technology capabilities. Demonstration projects and tools that measure PCMH principles should have greater emphasis on these primary care attributes.	Patient navigation in community primary care practices is useful for patients who have complex needs. Integrating such services into primary care settings will require new practice and payment models to realize the full potential of integrated patient navigation services in this setting.
Strengths/ Limitations	The study was a secondary analysis, so measures were limited by the previously collected data set. The authors did not have information on functionality of the EMR systems. Since the analysis was cross-sectional and observational, causality cannot be conferred from the associations made in the study.	The article is limited because it focuses on one individual working with a small number of physicians and providing services to only 75 mostly elderly patients; therefore the results can not be generalized broadly.
Funding Source	Funded by grants from the National Cancer Institute.	Supported by grants from the Overlook Hospital Foundation and University of Medicine and Dentistry of New Jersey Team Science Initiative.
Comments	None stated.	None stated.

Article Title and Journal	Is Consistent Primary Care Within a Patient Centered Medical Home Related to Utilization Patterns and Costs?, Journal Ambulatory Care Management	Care Coordination Services in Pediatric Practices, Pediatrics
Author/Year	Fontaine, P, Flottemesch, T. J., Solberg, L. I., Asche, S. E., 2011	Gupta, V. B., O'Connor, K. G., Quezada-Gomez, C., 2004
Database and Keywords	Science Direct, Medical Home, Utilization, Access to Care	Ovid, Medical Home and Care Coordination
Research Design	Qualitative Research	Qualitative Research
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The purpose was to find what proportion of health plan enrollees are using a single medical group or PCMH clinic for consistent primary care and what are the characteristics of this group compared to those behaving differently. Another goal was to find out if patients who use a single PCMH for their primary care have fewer visits and lower utilization costs than those who do not.	The goal of this study was to examine the frequency with which pediatricians provide care coordination services to children in their practices and the barriers to providing these services.
Population Studied/Sample Size/Criteria/ Power	21 HealthPartners Medical Group primary care clinics. Study subjects were all people who were enrolled in the HealthPartners health insurance plan and had at least 1 clinical visit in 2008.	1632 randomly selected US members of the American Academy of Pediatrics.
Methods/Study Appraisal/ Synthesis Methods	Person-level encounter data from claims were used to assign individuals to clinics. Groups included no primary care utilization, primary care fragmented across groups, primary care fragmented across clinics within HPMG and consistent primary care at a single clinic. Data was analyzed through descriptive statistics and univariate tests.	An 8 page questionnaire was mailed.
Primary Outcome Measures and Results	There were significantly more total visits among enrollees who fragmented care across medical groups than those who stayed within a single medical group but fragmented among clinics.	The response rate was 56.7%. Most pediatricians (71.2%) reported that they or someone else in the practice serves as the primary care coordinator for children with special needs, but fewer than on fourth (23.3%) contacted the school about the child's health and educational needs as a part of care coordination, only 18.7% always schedule time with the child's family to discussed the findings of a specialist and only 23.2% meet with the discharge planning team to facilitate transition from hospital to home.
Author Conclusions/ Implications of Key Findings	A finding of this study was health plan enrollees who chose to have a single, established PCMH provide a majority of their primary care had fewer primary care and specialty care visits and lower costs for professional fees compared to those who fragmented their care across clinics or medical groups.	Although most pediatricians believe they are providing care coordination services, when asked about specific care coordination activities, such as contacting the school, many do not provide these services.
Strengths/ Limitations	The fact that this study evaluates primary care utilization patterns among self selected groups within one health plan is both a strength and limitation.	Limitations include limited time and lack of medical staff in the offices.
Funding Source	None stated.	None stated.
Comments	None stated.	None stated.

Article Title and Journal	Influence of Primary Care Practice and Provider Attributes on Preventive Service Delivery, American Journal of Preventive Medicine	Implementing Developmental Screening and Referrals: Lessons Learned from a National Project, Pediatrics
Author/Year	Hung, D. Y., Rundall, T. G., Crabtree, B. F., Tallia, A. F., Cohen, D. J., Halpin, H. A., 2006	King, T.M., Tandon, S. D., Swingonski, N. L., Skipper, S. M., Lipkin, P. H., 2010
Database and Keywords	Medline, Medical Home and Preventive Primary Care	CINAHL, Medical Home and Referrals
Research Design	Quantitative Research	Quantitative and Qualitative Research
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The study seeks to identify both practice and provider attributes associated with the delivery of preventive services for health behaviors.	The purpose of the study was to assess the degree to which a national sample of pediatric practices could implement American Academy of Pediatrics recommendations for developmental screening and referrals and to identify factors that contributed to the successes and shortcomings of these efforts.
Population Studied/Sample Size/Criteria/ Power	52 primary care practices and 318 healthcare providers .	Chart audits of 17 diverse practices.
Methods/Study Appraisal/ Synthesis Methods	Quantitative data was gathered from September 2003 to September 2004 and were analyzed upon completion of data collection. Hierarchical linear modeling was used to examine associations between both practice and provider attributes and preventive service delivery.	Quantitative data from chart reviews were used to calculate rates of screening and referral. Qualitative data on practices' implementation efforts were collected through semi structured telephone interviews and inductively analyzed to generate key themes.
Primary Outcome Measures and Results	Practice staff participation in decisions regarding quality improvement, practice change, and clinical operations positively influenced the effect of work relationships an negatively influenced the effect of practice size and service delivery. Nurse practitioners and allied health professionals reported more frequent delivery of services compared to physicians. Use of reminder systems and patient registries were positively associated with preventive service delivery.	Nearly all practices selected parent completed screening instruments. At the project's conclusion, practices reported screening more than 85% of patients presenting at recommended screening ages. Many staff struggled with screening during busy periods. Most practices were unable or unwilling to implement a 30 month visit; to administer after surveillance suggested concern; and to submit simultaneous referrals both to medical subspecialists and local intervention programs. Overall, practices reported referring only 61% of children with failed screens.
Author Conclusions/ Implications of Key Findings	This study offers preliminary support for staff participation in practice decisions as a positive aspect of teamwork and collaboration. Findings also suggest leveraging nonphysician clinical staff and organized clinical systems to improve delivery of preventive services for health behavior	A diverse sample of practices successfully implemented developmental screenings as recommended by the AAP. Practices were less successful in placing referrals and tracking those referrals. More attention needs to be paid to the referral process, and many practices require separate implementation systems for screening and referrals.
Strengths/ Limitations	The generalizability of the study is limited because all clinics were members of practice-based research networks. Additionally the voluntary nature of data collection may have introduced a selection bias regarding practice attributes and individual clinical activity. Also the findings in this study are based on cross-sectional data that limit the ability to make causal inferences.	The 17 practices that participated in the study were not typical of all primary care practices. The chart reviews that generated the quantitative data for this project were collected b staff at each participating site. The small number of charts reviewed each month limited the precision of monthly estimates for rates of screening, failed screens, and referrals.
Funding Source	Supported by the Robert Wood Johnson	Support provided by the CDC and

	Foundation.	Prevention/National Center on Birth Defects and Developmental Disabilities and the Maternal and Child Health Bureau.
Comments	None stated.	None stated.
Article Title and Journal	Rethinking Well-Child Care in the United States: An International Comparison, Pediatrics	Priorities Among Effective Clinical Preventive Services: Results of a Systematic Review, American Journal of Preventive Medicine
Author/Year	Kuo, A. A., Inkelas, M., Lotstein, K. M., Sampson, K. M, Schor, E. L., 2006	Maciosek, M. V., Coffield, A. B., Edwards, N. M., Flottemesch, T. J., Goodman, M. J., Solberg, L. I., 2006
Database and Keywords	CIHAHL, Primary Care, Medical Home and Preventive Care	PubMed, Care Coordination in the Community and Medical Home
Research Design	Literature Review	Qualitative Research
Level of Evidence	Level IV on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The goal was to describe the process of well-child care delivery in industrialized nations and compare it to the US model of child health care.	The study was designed to produce comparable estimates of relative health impact and cost effectiveness for services considered effective by the U.S. Preventive Services Task Force and Advisory Committee on Immunization practices.
Population Studied/Sample Size/Criteria/ Power	10 countries including Netherlands, England, Australia, Sweden, France, Canada, Denmark, Germany, Japan, Spain.	Literature review of the National Commission on Prevention Priorities ranking clinical preventive services.
Methods/Study Appraisal/ Synthesis Methods	Literature reviews and international experts were used to identify 10 countries with unique features of well-child care delivery for comparison to the United States. Key informant interviews using a structured protocol were held with child experts in 10 countries to delineate the structural and practice features of the system.	The National Commission on Prevention Priorities guided this update to a 2001 ranking of clinical preventive services. The NCPP used new preventive services recommendations up to December 2004, improved methods and more complete and recent data and evidence. Each service received 1 to 5 points on each of two measures-clinically preventable burden and cost effectiveness for a total score ranging from 2 to 10.
Primary Outcome Measures and Results	In contrast to the United States, none of the countries place all well-child care components under the responsibility of a single primary care provider. Well-child services and care for acute, chronic, and behavioral/developmental problems are often provided by different clinicians and within different service systems.	The three highest ranking services each with a total score of 10 are discussing aspirin use with high risk adults, immunizing children and tobacco-use screening and brief intervention.
Author Conclusions/ Implications of Key Findings	Well-child care models from other countries differ from the US in key structural features on the basis of broad financing differences as well as specific visions for effective well-child care services. Features of these models can inform child health policy makers and providers in rethinking how desired improvements in US well-child care delivery might be sought.	This study identified the most valuable clinical preventive services that can be offered in medical practice and should help decision-makers select which services to emphasize.
Strengths/ Limitations	The complexity of the health care system limits the ability of all features to be described. The findings from these countries may not generalize to other European and industrialized countries.	Literature review, none stated.
Funding Source	Supported by a grant from the Commonwealth Fund.	Supported by Sanofi-Pasteur, GSK pharmaceuticals, and TAP pharmaceuticals.
Comments	None stated.	None stated.

Article Title and Journal	Practice-Based Care Coordination: A Medical Home Essential, Pediatrics	A Practice Based Intervention to Enhance Quality of Care in the First 3 Years of Life: The Healthy Steps for Young Children Program, Journal of American Medical Association
Author/Year	McAllister, J. W., Presler, E., Cooley, W. C., 2007	Minkovitz, C. S., Hughart, N., Strobino, D., Scharfstein, D., Grason, H., Hou, W., Miller, T., Bishai, D., Augustyn, M, McLearn, K. T., Guyer, B., 2003
Database and Keywords	CINAHL, Care Coordination, Medical Home, Access to Healthcare	PubMed, Childhood Healthcare
Research Design	Qualitative Research	Prospective Controlled Trial
Level of Evidence	Level IV on Four tiered level of evidence (Houser & Oman, 2011)	Level Ib on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The focus of this study was on establishment of care coordination competencies and the team based service systems in which they are implemented.	The focus of the study was to determine the impact of the Healthy Steps for Young Children Program on quality of early childhood health care and parenting practices.
Population Studied/Sample Size/Criteria/ Power	Policy statement, no population, sample size, criteria or power stated.	5565 children enrolled at birth and followed up through age 3 years. Criteria are Health Steps enrolled participants from September 1996 through November 1998.
Methods/Study Appraisal/ Synthesis Methods	The following steps guide the establishment of practice-based care-coordination services: articulate a care coordination definition, use a framework for practice based care coordination, declare facilitative, team based care coordination model approach, develop, test and implement a care coordination service capacity, strategically integrate care coordination services into team based primary care and evaluate care coordination.	Prospective Controlled Trial with incorporation of developmental specialists and enhanced developmental services into pediatric care in participants first 3 years of life.
Primary Outcome Measures and Results	Projected outcomes of care coordination include family satisfaction, staff satisfaction, improved child/youth outcomes and improved systems outcomes.	Quality of care was operationalized across 4 domains: effectiveness, patient centeredness, timeliness and efficiency. Parenting outcomes included response to child misbehavior and practices to promote child development and safety.
Author Conclusions/ Implications of Key Findings	With a focus on the formulation of a vision, definition, framework, model and a process for improving practice based care coordination, organizations or individual practices have a suitable beginning.	Universal, practice-based interventions can enhance quality of care for families of young children and can improve selected parenting practices.
Strengths/ Limitations	Policy statement, none stated.	The site selection process meant that Healthy Steps was evaluated against a high standard of performance among practices already oriented toward providing developmental and behavioral services. Baseline differences between quasi-experimental intervention and control families are a limitation to the extent that covariates did not account for these differences.
Funding Source	Supported by the US Maternal and Child Health Bureau.	Supported by the Commonwealth fund and local funds.
Comments	None stated.	None stated.

Article Title and Journal	Communication between Key Stakeholders Within a Medical Home: A Qualitative Study, Clinical Pediatrics*	The Pediatric Alliance for Coordinated Care: Evaluation of a Medical Home Model, Pediatrics
Author/Year	Nelson, C. S., Tandon, S. D., Duggan, A.K., Serwint, J. R., 2008	Palfrey, J. S., Sofis, L. A., Davidson, E. J., Liu, J., Freeman, L., Ganz, M. L., 2004
Database and Keywords	PubMed, Home Visitors, Medical Home, Communication	CINAHL, Medical Home and Coordinated Care
Research Design	Cross sectional, Qualitative Research	Qualitative Research
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The purpose of the study was to determine the perceived benefits and detriments of communication between pediatric primary care providers and home visitors and to determine the methods of and barriers to communication.	The objectives of this study were to characterize children with special healthcare needs (CSHCN) in the Pediatric Alliance for Coordinated Care (PACC), to assess parental satisfaction with PACC intervention, to assess the impact on hospitalizations and emergency department episodes and to assess the impact on parental work days lost and children's school days lost for CSHCN before and during the PACC intervention.
Population Studied/Sample Size/Criteria/ Power	3 focus groups with paraprofessional home visitors, 6 with parents receiving home visiting and 4 with pediatric providers whose patients received home visiting.	150 children with special health care needs in 6 Pediatric practices in Boston, Massachusetts.
Methods/Study Appraisal/ Synthesis Methods	The cross sectional, community based qualitative study consisted of separate focus groups with 3 key stakeholders to elicit their perspectives on communication: Home Visitors and their program supervisors, parents who received home visiting from the HVs and the pediatric PCPs of the home visited families.	Physicians completed enrollment information about each child's diagnosis and severity of condition. Families completed surveys at baseline and follow-up at 2 years, assessing their experience with health care for their children.
Primary Outcome Measures and Results	All stakeholder groups felt that HVs could give PCPs important information about families' lives. Examples included sharing information about the home environment and safety issues, family structure, evidence of substance abuse, family violence, family health, child behavior at home and specifically about the well-being of children who have missed office visits. All stakeholders felt that HVs should reinforce the advice and anticipatory guidance that providers give families during office visits.	A total of 60% of the children had >5 conditions, 41% were dependent on medical technology and 47% were rated by their physician as having a "severe" condition. 117 families provided data after the intervention. The PACC made care delivery easier including having the same nurse to talk to, getting letters of medical necessity, getting resources, getting telephone calls returned, getting early medical care when the child is sick, communicating with the child's doctor, getting referrals to specialists, getting prescriptions filled, getting appointments and setting goals.
Author Conclusions/ Implications of Key Findings	Greater coordination between home visitation programs and pediatric PCPs may simultaneously enhance home visiting program effectiveness and may help reinforce advice and anticipatory guidance given by pediatric providers.	The PACC medical home intervention increases parental satisfaction with pediatric primary care. There are some indications of improved health as well as decreased burden of disease with the intervention in place.
Strengths/ Limitations	The study involves a single community so findings cannot be generalized to other settings. Parents who volunteered to participate may represent either those parents who are most satisfied with the home visitation program or, conversely, those who were less satisfied and thus wanted to have their opinions noted.	The doctors and families in the study were highly motivated. There was an aging effect as the pre-post design allowed for children to act as their own controls.

Funding Source	Supported by the Ambulatory Pediatric Association Young Investigator Grant Program.	Supported by the Robert Wood Johnson Foundation.
Comments	None stated.	None stated.
Article Title and Journal	Racial and Ethnic Disparities in Indicators of a Primary Care Medical Home for Children, Academic Pediatrics	The Medical Home, Preventive Care Screenings, and Counseling for Children: Evidence for the Medical Expenditure Panel Survey, Academic Pediatrics
Author/Year	Raphael, J. L., Guadagnolo, A., Beal, A. C., Giardino, A. P., 2009	Romaire, M. A., Bell, J. F., 2010
Database and Keywords	CINAHL, Medical Home and Health Disparities	PubMed, Medical Home and Preventive Care
Research Design	Qualitative Research	Correlational Study
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The aims of the study were to examine racial/ethnic disparities among children in having a medical home and to determine whether a composite measure of medical home care provided any different information regarding disparities compared with assessing individual components of a medical home.	The aims of the study are to estimate the prevalence of having a medical home for all US children in a nationally representative sample and to examine the association between having a medical home and receipt of age-appropriate, health related screenings, and anticipatory guidance.
Population Studied/Sample Size/Criteria/ Power	84,101 children ages 0-17, from the 2003-2004 National Survey of Children's Health, a nationwide household survey.	21,055 children ages 0-17 years , with at least 1 office-based visit for health care within the year prior to the survey.
Methods/Study Appraisal/ Synthesis Methods	A secondary analysis was conducted. The primary independent variable was race/ethnicity of the child. The main dependent variable was a medical home as defined by the American Academy of Pediatrics. Multiple logistic regression was conducted to investigate associations between race/ethnicity and having a medical home.	A cross sectional analysis of the 2004-2006 Medical Expenditure Panel Survey was performed. A binary indicator of the medical home was developed from 22 questions in MEPS, reflecting 4 of the 7 American Academy of Pediatrics' recommended components of a medical home: accessible, family centered, comprehensive and compassionate care. Multivariable logistic regression was used to examine the association between the medical home and receipt of specific health screenings and anticipatory guidance, controlling confounding variables.
Primary Outcome Measures and Results	The odds for having a medical home were lower for non-Hispanic Black , Hispanic, and other children compared with non-Hispanic white children after adjusting for sociodemographic variables. Specific components of a medical home for which minority children had a lower odds of having compared with white children included having a personal provider, a provider who always/usually spent enough time with them and a provider who always/usually communicated well.	Approximately 49% of the study sample had a medical home. The medical home is significantly associated with 3 health screenings (weight, height and blood pressure) and several anticipatory guidance topics including advice about dental checkups, diet, exercise, car and bike safety.
Author Conclusions/ Implications of Key Findings	Minority children experienced multiple disparities compared with white children in having a medical home.	The medical home is associated with increased odds of children receiving some health screenings and anticipatory guidance. The medical home may provide an opportunity to improve the delivery of these services for children.
Strengths/ Limitations	The composite measure of a medical home, developed by CAHMI and MCHB, differs in definition of a medical home used in other surveys. These differences may affect estimates and therefore conclusions.	The data was parent reported and subject to recall bias. The quality of the content of the advice received cannot be quantified. The medical home indicators are subject to measurement error.
Funding Source	Supported by the Commonwealth fund.	Supported by a grant from the Agency for Health Care Research and Quality.
Comments	None stated.	None stated.

Article Title and Journal	The Medical Home: Growing Evidence to Support a New Approach to Primary Care, Journal of the American Board of Family Medicine	The Medical Home, Access to Care, and Insurance: A Review of Evidence, Pediatrics
Author/Year	Rosenthal, T. C., 2008	Starfield, B., Shi, L., 2004
Database and Keywords	Science Direct, Medical Home and Referrals	CINAHL, Medical Home and Access to Care
Research Design	Qualitative Research	Literature Review
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The article reviews both the peer-reviewed literature and program evaluations of medical homes to assist primary care providers and health planners in assessing the usefulness of the model in their own communities and practices.	The purpose was to review the extent to which the literature supports the position that a medical home is important and to review the extent to which insurance is related to having a medical home.
Population Studied/Sample Size/Criteria/ Power	Literature review of patient centered medical home models, no population, sample size, criteria or power stated.	Literature Review of medical home models, no population, sample size, criteria or power stated.
Methods/Study Appraisal/ Synthesis Methods	Standard literature databases including PubMed, and Internet sites of numerous professional associations, government agencies, business groups, and the private health organization identified over 200 references, reports and books evaluating the medical home and patient centered primary care.	A review of literature concerning the benefits of a medical home on effectiveness, costs, and equity was conducted.
Primary Outcome Measures and Results	The peer reviewed literature documents improved quality, reduced errors, and increased satisfaction when patients identify with a primary care medical home. Although industry has funded case management models demonstrating value superior to traditional fee-for-services reimbursement adoption of the medical home as a basis for medical care in the US, delivery will require effort on the part of providers and incentives to support activities outside of the traditional face-to-face office visit.	International and within nation studies indicate that a relationship with a medical home is associated with better health, on both the individual and population levels, with lower overall costs in care and with reductions in disparities in health between socially disadvantaged populations. Insurance does not guarantee a medical home.
Author Conclusions/ Implications of Key Findings	Evidence from multiple settings and several countries supports the ability of the medical homes to advance societal health.	A medical home provides better effectiveness as well as more efficient and more equitable care to individuals and populations. A concerted attempt to provide a means of universal financial access as well as a medical home should be of high priority for the US.
Strengths/ Limitations	The quality of each study was subjectively determined and could not be analyzed in the aggregate because most studies and evaluations used different interventions and approaches to data collection.	Literature review, none stated.
Funding Source	None stated.	Supported by the Bureau of Primary Health Care, Health Resources and Services Administration, and the Department of Health and Human Services.
Comments	None stated.	None stated.

Article Title and Journal	National Disparities in the Quality of a Medical Home for Children, Maternal Child Health Journal	The Medical Home: Health Care Access and Impact for Children and Youth in the United States, Pediatrics*
Author/Year	Stevens, G. D., Seid, M., Pickering, T. A., Tsai, K. Y., 2010	Strickland, B. B., Jones, J. R., Ghandour, R. M., Kogan, M. D., Newacheck, P.W., 2009
Database and Keywords	CINAHL, Medical Home and Health Disparities	CINAHL, Medical Home and health care delivery and access
Research Design	Qualitative Research	Cross sectional correlational study
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The purpose was to examine socio-demographic disparities associated with a quality medical home.	The purpose was to provide an up-to-date, population based assessment of medical home access for all children using a comprehensive definition and to describe the relationship between the presence of a medical home and receipt of preventive medical and dental care, and unmet medical and dental needs.
Population Studied/Sample Size/Criteria/ Power	A nationally representative sample of children ages 0-17 from the 2003 National Survey of Children's Health. Risk factors including non white race, income < 200% federal poverty level, uninsured, parent education lesser than high school and non-English primary language.	83,448 children aged 1 to 17 years .
Methods/Study Appraisal/ Synthesis Methods	Fourteen questions were used to measure five medical home features. Quality was defined as a value greater than median for each feature for an overall score.	A medical home measure was used comprising 5 components: having a persona physician or nurse, receiving all needed referrals to specialty care, receiving help for coordinating health care and receiving family centered care.
Primary Outcome Measures and Results	All studied risk factors were associated with poorer quality medical homes. Uninsured and low income children had among the lowest odds of a quality medical home.	56.9% of US children aged 1 to 17 years received care in medical homes. Younger children were more likely to have a medical home than older children. Children who received care in a medical home were less likely to have unmet medical and dental needs and were more likely to have annual preventive exams.
Author Conclusions/ Implications of Key Findings	This study demonstrates large national disparities in the quality of a medical home for children. The disparities were most prevalent for the uninsured and those in or near poverty, both modifiable risk factors.	Because the medical home is increasingly promoted as the standard for provision of high quality comprehensive health care, these findings reinforce the need to continue and expand federal, state and community efforts to ensure that all children have access to this model of care.
Strengths/ Limitations	The data is cross sectional and does not demonstrate causality between the risk factors and medical home quality.	The estimates provided are limited by the knowledge and recollection of the parent. Also because of the cross sectional nature of the study, there are limitations in drawing causal inferences from data.
Funding Source	Supported by the Federal Maternal and Child Health Bureau.	Supported by the Maternal and Child Health Bureau.
Comments	None stated.	None stated.

Article Title and Journal	Barriers to Children Having a Medical Home in Johnson County, Iowa: Notes from the Field, Maternal Child Health Journal	Impact of the Health Services Utilization and Improvement Model (HUIM) on Self Efficacy and Satisfaction Among a Head Start Population, Journal of Health and Human Services Administration*
Author/Year	Swingle, H. M., Wilmoth, R., Aquilino, M. L., 2008	Tataw, D. B., Bazargan-Hejazi, S., 2010
Database and Keywords	CINAHL, Medical home and health care access	EBSCO, Patient Centered Medical Homes and Head Start
Research Design	Quantitative and Qualitative Research	Quasi-experimental
Level of Evidence	Level Ib on Four tiered level of evidence (Houser & Oman, 2011)	Level IIb on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The purpose was to identify barriers to access to a medical home for children who use Johnson County Public Health services and to recommend strategies to overcome these barriers.	The aim of the study was to evaluate and report the impact of the HUIM on utilization and satisfaction with care, as well as knowledge regarding prevention, detection, and treatment of asthma, diabetes, tuberculosis, and child injury among low income health services consumers.
Population Studied/Sample Size/Criteria/ Power	71 families interviewed attending Johnson County Public Health well child and WIC clinics.	The two year HUIM reached 80 community providers, and provided education services to 250 participating parents representing 600 CDU Head Start children.
Methods/Study Appraisal/ Synthesis Methods	Families were randomly selected to be interviewed using a semi-structured 38 item questionnaire. Data analysis used qualitative and quantitative methodologies.	Enrolled participants filled out a 30-40 minute structured questionnaire. Follow up assessments were performed. A pretest and 3 month post intervention assessment was given. A pretest and 6 months post intervention assessment test was given. Parents attended parental education workshops on select preventive health techniques. Health systems education workshops were also given to the parents. Provider orientation workshops were held covering medical homes for Head Start children. Community health workers performed non-clinical case management. Staff at Head Start facilitated access to a new provider, enrolled another child in the house to a payer source and identified and directed families to local free or low cost community health facilities.
Primary Outcome Measures and Results	85% of the population families cited financial barriers. Lack of US citizenship accounted for 59% without health insurance. A recent move contributed to 29% without medical homes.	Comparing baseline data and follow up, there was a 13% increase in the percentage of respondents who reported extremely satisfied with the ability to be open with providers. Pretest 13% of respondents reported having excellent knowledge regarding diabetes education, post test 27% reported such answers. Positive trends were detected
Author Conclusions/ Implications of Key Findings	Lack of health insurance, due primarily to citizenship status, is the greatest barrier to access to a medical home in this population. The migratory nature of the US population, marked cultural diversity and parental attitudes were additional barriers to children's access to a medical home.	HUIM outcomes data whose that the coupling of parental education and ecological factors (service linkage and provider education) impacts the health services utilization experience of low income consumers evidenced by improvement in self efficacy and satisfaction with care from a child's regular provider.
Strengths/ Limitations	Many of the quantitative analyses in the study were underpowered. None of the conclusions were based solely on the	One limitation of the HUIM evaluation was the length of time between intervention and follow up assessment.

	quantitative data.	
Funding Source	None stated.	Supported by a grant from the California Endowment.
Comments	None stated.	None stated.
Article Title and Journal	Health Services Utilization and Improvement model (HUIM) for Head Start Families, American Journal of Health Studies	The Preventive Health Education and Medical Home Project (PHEMHP): A Predictive and Contextual Model for Low-Income Families, Social Work in Public Health
Author/Year	Tataw, D. B., Bazargan-Hejazi, S., Kima-Johnson, S., Rahman, L., Bean, X., 2007	Tataw, D. B., James, F., Bazargan, S., 2009
Database and Keywords	CINAHL, Patient Centered Medical Home and Head Start	CINAHL, Patient Centered Medical Home and linking children in the community
Research Design	Case Study	Contextual model description
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The purpose of the case study is to outline the Health Services Utilization and Improvement Model (HUIM), a program designed to reduce low levels of health care utilization and improve preventive health techniques and disease self management for Head Start families with the ultimate goal of attaching each child to a medical home.	The PHEMHP is a predictive and contextual model intended to reduce low levels of health services utilization and improve preventive health techniques and disease management for low income families in South Central Los Angeles, with the ultimate goal of attaching each child to a medical home. The PHEMHP is driven by community needs and designed with and for low income communities. This paper presents the contextual framework for the model.
Population Studied/Sample Size/Criteria/ Power	The two year HUIM reached 80 community providers and provided education services to 250 participating parents representing 600 CDU Head Start children.	Low income families in South Central Los Angeles.
Methods/Study Appraisal/ Synthesis Methods	Methods used include instructional materials, group teaching and tools including posters, displays, flipcharts, and bulletin boards. A comprehensive survey was utilized and administered at baseline, 3 months and 6 months. A pre and post survey was given before and after the educational sessions. Factors on the survey included predisposing characteristics, enabling characteristics, perceived health factors, knowledge of existing services, self efficacy in disease prevention, and self management skills.	The PHEMHP is a contextual model because the specifics of interventional activities and implementation strategies vary with the needs of the target population and the style and needs of the participating program implementation partners. The strategy will involve parent and provider education, non-clinical case management, a medical home, performance tracking, partnerships and collaboration.
Primary Outcome Measures and Results	No outcome measures were identified as this article only discussed the components of the HUIM.	Future outcome measures for the client involve improved knowledge, self care, satisfaction and utilization. Outcomes for the provider include compliance and sensitivity to patient needs.
Author Conclusions/ Implications of Key Findings	In the implementation process of the HUIM, the value of partnerships and collaboration was learned. The next step is to fully implement the HUIM in all 21 Drew University Head Start sites.	The PHEMHP as a systems model brings together public health and medical practice as well as individual and ecological determinants of health. The PHEMHP's framework and its recommended intervention activities can generate enough human and environmental stimuli and reinforcements to overcome barriers to preventive health behavior and health services utilization among low income urban children and their families.
Strengths/ Limitations	No limitations/strengths were discussed.	No limitations/strengths were discussed.
Funding Source	Supported by a grant from the California Endowment.	Supported by a grant from the California Endowment.
Comments	None stated.	None stated.

Article Title and Journal	Review: Medical Homes: "Where You Stand on Definitions Depends on Where You Sit." Medical Care Research and Review.	A Longitudinal Study of a Pediatric Practice-Based Versus an Agency-Based Model of Care Coordination for Children with Special Health Care Needs (CSHN), Journal of Maternal and Child Health
Author/Year	Vest, J. R. , Bolin, J. N., Miller, T. R., Gamm, L. D. Siegrist, T. E., Martinez, L. E., 2010	Wood, D., Winterbauer, N., Sloyer, P., Jobli, E., Hou, T., McCaskill, Q., Livingood, W. C., 2008
Database and Keywords	CINAHL, Access to Health Care and Medical Home	PubMed, Medical Home and Care Coordination
Research Design	Literature Review	Prospective Cohort
Level of Evidence	Level III on Four tiered level of evidence (Houser & Oman, 2011)	Level III on Four tiered level of evidence (Houser & Oman, 2011)
Study Aim/Purpose	The review offers a comprehensive analysis of numerous medical home definitions, an analysis that is relevant to both policy and practice. The review is comprehensive because it includes definitions from the perspectives of providers, academics, organizations, and governmental agencies.	Not studies have prospectively compared a practice based care coordination model to a Title V agency based care coordination model. The purpose is to discover the results of a prospective cohort study comparing practice based nurse care coordinator model with a Title V agency based care coordination model.
Population Studied/Sample Size/Criteria/ Power	Literature Review of medical home models, no population, sample size, criteria or power stated.	349 CSHCN across 6 practices actively enrolled in Title V.
Methods/Study Appraisal/ Synthesis Methods	Websites of government agencies, organizations representing health care professionals, and organizations representing various sectors of the health care industry for definitions and position statements of medical homes were utilized. Affinity diagramming was used.	Three pediatric practices received the intervention, placement of a nurse care coordinator on site within the practice, along with training and quality improvement on principles of the medical home. Three practices continued to rely on agency based care coordination services. CSHCN in the practices were identified, interviewed at baseline, and reinterviewed after 18 months.
Primary Outcome Measures and Results	Definitions of the medical home from three of the originators of the Joint Principles were located. Most notably absent in these definitions is the reference to payment forms. Both CMS and America's Health Insurance Plans provide narrower definitions, such as excluding linkages to community services, and do not limit medical home provision to the single physician.	Families in the practice based care coordination group were more likely to report improvement in their experience with the care coordinator, fewer barriers to needed services, higher overall satisfaction with care coordination and better treatment by office staff.
Author Conclusions/ Implications of Key Findings	Focusing on the commonalities and aggressively promoting the most critical elements will reduce providers' ambiguity and allow the medical home to be more fully evaluated as an alternative form of care or as a truly transformative strategy.	Practice based care coordination in the medical home led to increased satisfaction with the quality of care they received and reduction of barriers to care. The practice based care coordination model is utilized by a minority of state title V agencies and should be considered as a potentially more effective model than agency based approach.
Strengths/ Limitations	A limitation is that it does not systematically examine all sources dating back to the first proposal of the medical home concept. The primary result of this limitation is that not all definitions of the medical home are represented by this search strategy.	A limitation may include the lack of a randomized assignment to intervention and comparison groups may reduce the validity of causal relationships.
Funding Source	Supported by a grant from the National Science Foundation.	Supported by the Florida Title V agency, Children's Medical Services.
Comments	None stated.	None stated.

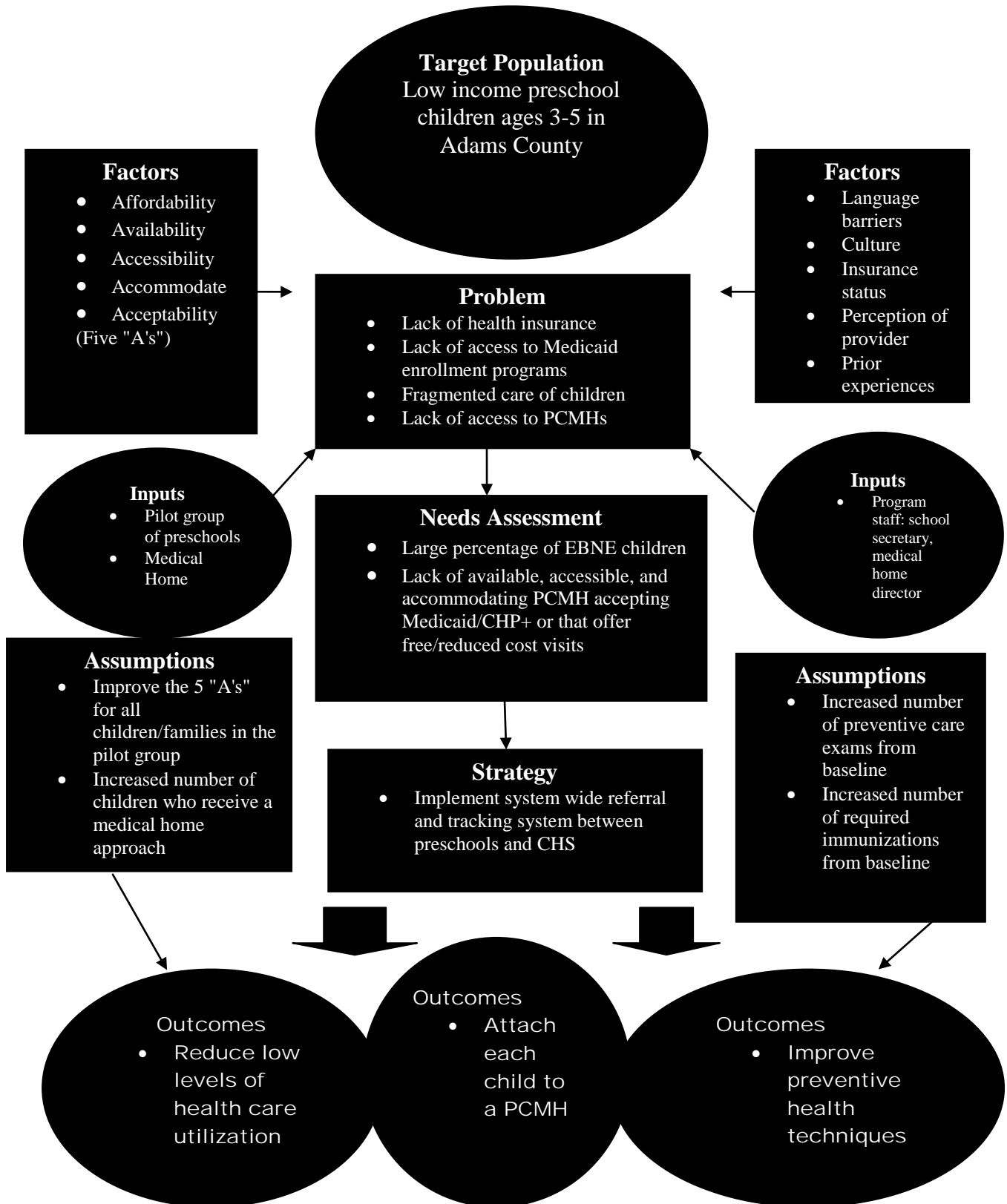
Appendix B

Logic Model

Resources-Inputs	Activities	Outputs	Outcomes	Impacts
A preschool study group of 13 schools associated with ECPAC; ECPAC office for project development activities	Design a parent health questionnaire for preschool enrollment packets to be distributed in August 2011	900 children will have received the health questionnaire from the preschool enrollment packets	Short Term: Increase from baseline, the number of age appropriate exams in the study group; age appropriate measures include a Well Child Exam, Weight, Height, BMI, Head Circumference, Blood Pressure, Vision Screening, Hearing Screening, Developmental assessment, anticipatory guidance, and safety issues.	A universal referral and tracking system that is implemented in all preschools affiliated with ECPAC, Adams County Head Start programs and Adams County publicly funded preschools with community medical home involvement
A Medical Home that addresses affordability, accessibility, acceptability, availability, and accommodation	Design a referral system that links identified children in the study preschools to a PCMH	All referred children/families are aware of how to obtain medical services from a PCMH if needed	Short Term: Increase from baseline, the number of required immunizations	Increase in preventive exams and a decrease in acute visits to the ED, through educational opportunities at the preventive care exam
Program Staff: preschool secretaries, preschool	Obtain baseline data from CHS for all children who are	All preschool teachers and directors are aware of the	Short Term: Attaching each child to PCMH	Increased parent knowledge of health care

directors, CHS medical director, Community Health Services' director of outreach and resources, ECPAC director, Partnerships for Healthy Communities director	initially referred to CHS	program and feel confident to refer students to the school secretary for further follow up	Short Term: Reduce low levels of health care utilization, improving access through the referral system	access and basic health care knowledge related to their children
Teachers in the preschools knowledgeable about referring children to the referral program	Design a tracking system with CHS to track the number of preventive care exams being performed		Long Term: More efficient use of health care dollars through preventive care rather than acute care in the ED	
Referral and tracking system intact	Design a training session regarding policies and procedures of the project for preschool directors and referring facilities		Long Term: Parents improved knowledge of preventive care	
Grant from Mile High United Way	Assemble a referral packet for each preschool			

Appendix C
Conceptual Diagram



Appendix D
Parent, Provider, and Director Survey Tool

Primary Care Prevention of Preschool Children through a Patient Centered Medical Home Approach

Principal Researcher: Joanna Dominick DNP (c), MSN, APRN-C

Subject Consent

Purpose of the Study

The purpose of the study is to obtain anonymous information about how your child's medical services are currently being coordinated so that we can improve these services for you and your family. Your participation in this study is voluntary.

Procedures

If you agree to participate you will be asked to complete a short survey. The survey will take approximately 5 minutes to complete and will not identify you or your child by name. Only the investigator and others authorized on the release form you signed in the preschool enrollment packet will have access to the material. This survey is anonymous. **Do not write your name on the survey.** No one will be able to identify you or your answers, and no one will know whether or not you participated in the study.

Discomforts and Risks

There is very little risk to you as a participant. You are not required to share any information you do not wish to share. If any topic makes you uncomfortable, you may choose not to participate or you may stop taking the survey at any time without any consequences to you.

Benefits

You will not receive any monetary benefit. However, you will benefit from a coordination of medical services for your child from one single medical clinic that will take care of all of your child's health care needs.

Source of Funding

This research is being partially funded by a grant from Mile High United Way.

Cost to Subject

This study is strictly voluntary. There is no cost for participation in the study.

Study Withdrawal

Your participation in the survey is entirely voluntary and you may decide not to complete the survey at anytime.

Invitation for Questions

If you have any questions about the study, please contact Joanna Dominick, at jdominic@regis.edu or by telephone at 720-854-8046. You may also contact the Regis Faculty sponsor, Dr. Phyllis Graham-Dickerson, at pgrahamd@regis.edu or by telephone at 303-458-4063.

If you have any questions about your rights as a research subject or if you feel you've been placed at risk, you may contact the Regis University Institutional Review Board (IRB) by mail at Regis University, Office of Academic Grants, 447 Main, Mail Code H-4, 3333 Regis Blvd., by phone at (303) 346-4206, or by e-mail at emay@regis.edu. **Parent Signature:** _____ **Date:** _____

Child's Name: _____ **Date of Birth:** _____

FOR PROVIDER USE ONLY:

1. What type of office visit was the child seen for today? Circle all that apply.
IZ update, WCC, medical advise, emergency care (ex. nebulizer, sutures, casting), dental care/referral, eye care/referral, mental health care/referral, hospital f/u, other specialist referral
2. What type of health screening was performed in the clinic today? Circle all that apply.
HT, WT, BP, BMI, vision screen, hearing screen, dental screen
3. Was anticipatory guidance discussed at the office visit today?
YES NO

COMMENTS _____

Parent Survey Tool

Please fill out one survey for EACH child.

Medical Questions - Circle One

1. How many Well Child visits has your child had in the past 12 months?
a. Less than 1 visit b. One visit
2. How many times has your child visited a medical clinic for a problem visit in the past 12 months?
(These do NOT include Urgent Care or Emergency room visits)
a. Zero visits b. 1-5 c. 5-10 d. More than 10 visits
3. If your child was taken to a medical clinic in the past 12 months, why were they seen?
a. Immunizations or routine check up
b. Medical advice
c. Emergency care
d. Dental care
e. Eye care
f. Hospitalization
g. Specialty care
4. Is your child up to date on their immunizations?
a. yes b. no c. unknown
5. Has your child had a health screening in the past 12 months including a height check, weight check, blood pressure, body mass index or vision screen?
a. yes b. no c. unknown
6. Has your child had a developmental assessment in the past 12 months (checking for age appropriate activities like gross motor skills or fine motor skills)?
a. yes b. no c. unknown
7. Has your child received teaching from a health professional regarding diet, exercise, secondhand smoke, dental checkups, bicycle helmet use, safety seat use, booster seat use or seat belt use in the past 12 months?
a. yes b. no c. unknown
8. How many referrals has your child received to a specialist physician in the past 12 months?
a. Zero b. One c. Two d. Three or more referrals
9. How many emergency room (ER) or urgent care (UC) visits has your child had in the past 12 months?
a. Zero b. 1 ER/UC visit c. 2 ER/UC visits d. 3 or more ER/UC visits
10. Has your child had any overnight stays in the hospital in the past 12 months?
a. Zero b. 1 overnight stay c. 2 overnight stays d. 3 or more overnight stays

Demographic Questions - Circle One

1. What gender is your child?
a. Male b. Female
2. What is your child's age in years, at the time of this survey?
a. 3 years b. 4 years c. 5 years
3. What is the primary language spoken at home?
a. English b. Spanish c. Other
4. What type of insurance does your child have?
a. Private b. Medicaid or Child Health Plan Plus c. None
5. What is your child's ethnicity?
a. Hispanic b. White c. African American d. Asian American e. Other
6. What is your (parent) highest level of education?
a. Some high school but did not graduate
b. High school graduate or GED
c. 4 year college graduate
d. More than 4 years of college
7. Does your child currently have a personal doctor or nurse?
a. yes b. no c. Unknown
8. Where do you take your child when he or she is sick?
a. Emergency room or Urgent care b. Community health clinic c. Private doctor's office

Appendix E
Timeline

Capstone Project Timeline	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11
Step I: Problem Recognition	Need identified in the population	Problem statement formulated; evidence based solutions outlined	Grant project reviewed with community mentors; impact of problem identified	Grant project reviewed with community mentors; evidence based solutions outlined		Began SRL; problem statement refined	Continue SRL
Step II: Needs Assessment				Began working with ECPAC and identified a need in this community	Team selection complete, stakeholder and community partners identified		
				Sponsors and stakeholders identified	Resources assessed; outcomes described for the capstone project and for the grant		
				Organization assessment begun	Population assessment begun	Continued population assessment	Data finalized for the population assessment
Step III: Goals, Objectives, & Mission Statement						Capstone project and grant goals discussed with team leaders	
Step IV: Theoretical Underpinnings	Theories selected for the DNP capstone project						
Step V: Work Planning							
Step VI: Planning for Evaluation							
Step VII: Implementation							
Step VIII: Giving Meaning to the Data							
Step IX: Utilizing Reporting							
Capstone	May-11	Jun-11	July-11	Aug-11	Sep-11	Oct-11	

Project Timeline						
Step I: Problem Recognition						
Step II: Needs Assessment	Organization assessment completed		Began the cost-benefit analysis for the capstone project			Cost-benefit analysis completed
Step III: Goals, Objectives, & Mission Statement	Process outcomes, goals, and objectives discussed in more detail		Mission statement developed and project goals identified			Project goals and mission statement revised
Step IV: Theoretical Underpinnings						Literature search for new theories to support the capstone project
Step V: Work Planning	Project methodology section begun	Project methods development continue	IRB application process initiated	IRB application completed and submitted	IRB application approved 9/1/2011	Project budget constructed
		CITI Human Subjects Training complete	All tools finalized for implementation in August	Meetings conducted with community partnerships prior to implementation of the referral system in the preschools		
		Tracking section of survey developed	Informed consent for survey finalized	Initial project timeline constructed		
		Data dictionary constructed and measurement tool identified	Capstone project milestones initiated			
		Initial project proposal completed				
		Scope of the project clearly defined with outcome measures				
		Finalized community assessment				
Step VI: Planning for Evaluation	Logic model for the capstone project completed	Initial data analysis plan developed				

Step VIII: Giving Meaning to the Data	School demo- graphic data collected	School referral and tracking data collected		Final preventive health survey data collected from families and providers	Data analysis complete for final project		
				Data analysis begun with statistician			
Step IX: Utilizing & Reporting Results						Written dissemination to school 4/9/2012	Written dissemination to agency
						Electronic dissemination to school library 4/9/2012	
						Oral dissemination to school	Oral dissemination to agency

Appendix F

Cost-Benefit Analysis and Budget

2011	Current Year (CY)	
Budget	\$73,000.00	
Costs		Cost Benefit Analysis
ECPAC Director	\$35,000.00	
ECPAC Coordinator	\$10,000.00	
Project Coordinator	\$10,000.00	
Outreach Site Salaries	\$600.00	
paper	\$500.00	Total PV Benefits
printing material (toner, ink)	\$500.00	\$22,750
driving expenses	\$200.00	Total PV Costs
use of equipment at		\$69,900
ECPAC	\$500.00	NET BENEFITS
meeting time and		\$25,850
equipment	\$200.00	
time consumption at CHS	\$500.00	
time consumption		
preschools	\$500.00	
Indirect costs	\$11,400.00	
Total Costs (Future Value)	\$69,900.00	
Total Costs (Present Value)	\$69,900.00	\$69,900.00
 Benefits		
Preschool/provider		
education	\$2,500.00	
Parent education	\$9,000.00	
Community agency		
education	\$750.00	
Preventive rather than		
acute care	\$1,000.00	
Time saved looking for a		
provider and making		
appointments	\$9,000.00	
Unnecessary medical		
expenses	\$500.00	
Total Benefits (Future Value)	\$22,750.00	
Total Benefits (Present Value)	\$22,750.00	\$22,750.00
\$ not used from grant	\$3,100.00	
Present Value Discount Rate	2%	

Appendix G
IRB Approval Letter



Academic Affairs
Academic Grants

3333 Regis Boulevard, H-4
Denver, Colorado 80221-1099

303-458-4206
303-964-3647 FAX
www.regis.edu

IRB – REGIS UNIVERSITY

September 1, 2011

Joanna Dominick
4883 West 114th Drive
Westminster, CO 80031

RE: IRB #: 234-11

Dear Joanna:

Your application to the Regis IRB for your project "Primary Care Prevention of Preschool Children through a Patient Centered Medical Home Approach" was approved as exempt on September 1, 2011.

The designation of "exempt," means no further IRB review of this project, as it is currently designed, is needed.

If changes are made in the research plan that significantly alter the involvement of human subjects from that which was approved in the named application, the new research plan must be resubmitted to the Regis IRB for approval.

Sincerely,

Don Bridger
Director, Office of Academic Grants

cc: Phyllis Graham-Dickerson, PhD, RN, CNS

Appendix H
CITI Training Certificate

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report Printed on 6/7/2011

Learner: Joanna Dominick (username: jdominic)

Institution: Regis University

Contact Information

Department: Nursing

Email: jdominic@regis.edu

Social Behavioral Research Investigators and Key Personnel:

Stage 1. Basic Course Passed on 06/07/11 (Ref # 6137501)

Required Modules	Date Completed	
Introduction	06/06/11	no quiz
History and Ethical Principles - SBR	06/07/11	4/4 (100%)
The Regulations and The Social and Behavioral Sciences - SBR	06/07/11	5/5 (100%)
Assessing Risk in Social and Behavioral Sciences - SBR	06/07/11	5/5 (100%)
Informed Consent - SBR	06/07/11	5/5 (100%)
Privacy and Confidentiality - SBR	06/07/11	3/5 (60%)
Regis University	06/07/11	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

[Return](#)

Appendix I
Letter of Approval from Agency

September 1, 2011

IRB
Regis University
3333 Regis Blvd
Denver, CO 80221-1099

RE: **Primary Care Prevention of Preschool Children through a Patient Centered Medical Home Approach**

Joanna Dominick APRN-C, MSN

Dear Regis IRB,

The purpose of this letter is to confirm *Community Health Service's* participation in **Primary Care Prevention of Preschool Children through a Patient Centered Medical Home Approach** that **Joanna Dominick** will be carrying out in our institution. Further, *Community Health Service*, accepts the review/judgment of the Regis IRB regarding the use of human subjects in this project.

Sincerely,

Sarah Winbourn M.D., Medical Director of Community Health Services

Project Description:

Purpose of the Study

The purpose of the study is to obtain anonymous information about how your preschool children's medical services are currently being coordinated so that these services will be improved. Participation in this study is voluntary for the families. There will NOT be any extra work on the director's part for this project. The researcher will simply be following up on information obtained from the initial referral system that was implemented in your enrollment packets. The researcher may request general, anonymous information about the number of children in the center that are up to date on physicals and immunizations for study purposes only. Thank you for considering!