Objective. To improve Early Head Start/Head Start (EHS/HS) screening, referral, and enrollment for children from diverse, low-income communities. Method. Using existing resources, we built a pediatric clinic–Head Start partnership. Key steps included (1) screening protocol and tracking system, (2) a community partner as a single point of referral contact, (3) provider education, and (4) monthly outcome reporting. A pre-and post-cross-sectional study design was used to evaluate outcomes, with medical chart review conducted for all wellness visits among children aged 0 to 4 years pre- and postintervention. Results. The preintervention group included 223 patients. The postintervention group included 235 patients. EHS/HS screening improved significantly after the intervention, rising from 8% in the preintervention period to 46% in the postintervention period (odds ratio [OR] 10.5, 95% confidence interval [CI] [5.9, 19.4]). EHS/HS documented referral rates increased from 1% in the preintervention period to 20% in the postintervention period (OR 18.3, 95% CI [5.7, 93.6]). Thirty-two of the 42 patients in the postintervention group referred to EHS/HS were reached to determine enrollment status. Six children (14%) had enrolled in EHS/HS. Conclusion. With use of existing resources, a medical home–Head Start partnership can build an integrated system that significantly improves screening and referral rates to early learning programs.

Keywords: early education; medical home–community partnership; underserved

BACKGROUND

Fostering early childhood development is critical for promoting lifelong educational success as well as physical and mental well-being (Peterson & Howell, 2012; Shonkoff & Phillips, 2000). The High/Scope Perry Preschool Program and Abecedarian Project provided evidence that high quality early education positively nurtured childhood development and improved long-term outcomes, such as high school graduation rates, lower teen pregnancy rates, higher adult earning potential, and decreased criminal activity (Campbell et al., 2012; Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Campbell & Ramey, 1994; Muennig et al., 2011; Muennig, Schweinhart, Montie, & Neidell, 2009; Schweinhart et al., 2005).

Early learning programs particularly benefit low-income children. These benefits include improved cognitive development, social–emotional skills, family engagement, and health-related outcomes such as up-to-date immunization status, access to wellness care, and healthier body mass index (Barnett, 2013; Love et al., 2002; Ludwig & Phillips, 2008; Lumeng et al.,

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Despite the strong evidence in support of early learning, 6 out of 10 U.S. children are not enrolled in publicly funded preschools (Barnett, Carolan, Squires, Clarke Brown, & Horowitz, 2014; U.S. Department of Education, 2015). Families face significant barriers to enrollment, including the limited availability of programs, difficulty completing the necessary paperwork, and cultural preferences for home-based care (Karoly & Gonzalez, 2011).

The American Academy of Pediatrics’ policy statement on early education supports the role of pediatricians in ensuring quality early child care and early learning opportunities (Johnson et al., 2005). Within the medical home, pediatricians can help families overcome barriers to enrollment by facilitating connections to early learning programs. However, pediatricians also face barriers related to screening and referring to community resources, including lack of time, limited knowledge of available resources, and limited staff support (Garg & Dworkin, 2011; Silverstein, Grossman, Koepsell, & Rivara, 2003).

A study by Silverstein et al. (2004) demonstrated that a grant-funded, clinic-based intervention linking families with Head Start increased child enrollment when barriers were removed. The study included a computer-generated referral packet and depended on study personnel to determine the appropriate Head Start location and connect families by sending the referral packet. This approach was not sustained after the study period. It is therefore unknown whether medical homes can successfully enroll children into early learning programs using existing clinic and community resources, including the critical step of connecting families with the appropriate early learning site. The current study sought to address this knowledge gap by building a medical home–Head Start partnership and referral system using existing resources. The goals were to build a partnership between the pediatric clinic and local early learning program, develop a referral and tracking system integrated within the electronic medical record (EMR), educate medical providers and staff about accessing early learning programs, and connect families with the appropriate learning program.

METHOD

Study Design

We conducted a descriptive study summarizing the steps to build a partnership and referral system between a pediatric medical home and Early Head Start/Head Start program. A pre- and posttest study design was used to determine if the intervention, defined as the partnership formation and referral system implementation, affected key outcomes, including screening, referral, and enrollment rates of children into Early Head Start/Head Start programs (Grembowski, 2001). The partnership was formed using the collective impact framework, which addresses complex social issues through cross-sector work and includes a common agenda, shared measuring systems, reinforcing activities, and support organizations (Kania & Kramer, 2011).

Setting

The University of Washington–Harborview Pediatric Clinic is an urban academic pediatric primary care clinic with more than 7,000 annual patient visits. The clinic serves a diverse, low-income patient population, including many refugee and immigrant families in Seattle, Washington. More than 85% of pediatric patients have Medicaid insurance, and approximately half speak a language other than English at home, most commonly Somali, Spanish, Amharic, Vietnamese, Oromo, or Tigrinya. The clinic offers multiple specialty services to support families, including teen health, foster care, psychiatry, nutrition, social work services, and legal aid. The clinic is the continuity clinic teaching site for 12 pediatric residents and 30 medical students per year, who are supervised by 11 attending pediatricians.

The Denise Louie Education Center (DLEC) provides Early Head Start home visiting services and Head Start preschool to more than 575 local families in Seattle, Washington. These programs support early childhood development through quality educational activities, promoting positive caregiver–child relationships, screening for developmental delay, and connecting families with dental, medical, mental health, and social services.

Participants

The study population included all children 0 to 4 years of age who received primary care in the Harborview Pediatric Clinic. The patients served by the clinic live in a large geographic area surrounding Seattle, Washington. Since the clinic provides care for a predominately low-income patient population, all children were included and considered eligible for Early Head Start/Head Start. Children aged 0 to 2 years were referred to Early Head Start. Children aged 3 to 4 years were referred to Head Start.
**Intervention Timing**

The medical home–Head Start partnership was formed in December 2014. The referral system intervention was first introduced to medical providers in February 2015. The system (see Results section for full description) was considered fully implemented by July 1, 2015, following completion of medical provider education. Providers started referring children to early learning programs as early as February 1, 2015.

**Data Collection**

A medical chart review was conducted for all wellness visits among children aged 0 to 4 years during selected pre- and postintervention time periods. The preintervention period was July 1 through September 30, 2014 (before launch on February 1, 2015). The postintervention data collection period was July 1 through September 30, 2015, which followed full referral system implementation. The 3-month pre- and postintervention time periods were purposefully selected to reduce the possibility of seasonal variation in clinic volumes, resident training level, and early learning program enrollment practices.

We reviewed the progress note, problem list, and referral letter section of the medical chart for each patient to determine (1) whether the provider asked the family if they were already enrolled or interested in referral to Early Head Start/Head Start and (2) whether the provider generated a referral to Early Head Start/Head Start. Screening was considered positive if a family was asked about enrollment or interest in early learning program, including Early Head Start/Head Start, preschool, or other home visits programs. Child care participation was not included.

A family member for each referred child was contacted by phone to determine the status of the referral, including declined, wait-listed, and enrolled. Professional telephonic interpreters were used for families whose preferred language for health care was not English. Up to three attempts were made to reach each family. Parents were also asked about barriers to enrollment during the phone call.

As patients in the postintervention group continued to receive wellness care in the clinic beyond the defined 3-month time period selected for the medical chart review, there were subsequent opportunities for patients to be referred to early learning programs if not initially referred. To capture these subsequent referrals, we reviewed the problem list (which was used for tracking referrals) for each patient in the postintervention group 1 year after full program implementation (referrals made up until July 1, 2016).

**Data Analysis**

Demographic information gathered for each patient included medical record number, date of birth, gender, language, and zipcode. Logistic regression was used for univariable comparisons of Early Head Start/Head Start screening rates and Early Head Start/Head Start enrollment rates for the pre- and postintervention groups.

The University of Washington Human Subjects Division approved this study.

**RESULTS**

**Process Measures**

*Partnership Formation and Referral System.* The lead author contacted seven early learning organizations in King County, including federally funded (e.g., Head Start) and state-funded programs (e.g., Early Childhood Education and Assistance Program). Each program was asked to share information about their referral process and was invited to collaborate with the Harborview Pediatric Clinic to enroll children into their programs. The DLEC responded to this request and offered to form a partnership with the pediatric clinic, based on a shared mission to support local families. A core leadership group was developed consisting of a physician lead, a clinical social worker, the DLEC director of the Birth-to-Five Program, and the manager of the Early Head Start program.

*Development of Referral Process and Integration Into the Electronic Health Record.* Over the course of 2 months, the leadership group developed the process to facilitate enrollment of children from birth to 4 years into early learning programs. The five-step referral process (see Figure 1) was developed to overcome barriers faced by both providers and families in connecting with local early learning program. To standardize the process for medical providers, a one-page instruction protocol was sent via e-mail and also laminated and kept next to provider work stations for easy reference. Medical providers, including faculty, residents, and midlevel providers, were instructed to screen and refer during all wellness visits for children aged 0 to 4 years. With parental consent, the medical provider created a templated letter in the EMR auto-populated with patient demographic and contact information that was directly routed to the clinic social worker. The problem list in the EMR was used to track screening and referral status using an “educational circumstance” ICD-10 code, which was updated to Head Start referral status (e.g., “Head Start referred”). The clinic social worker entered each referral into a tracking registry to monitor referral
status and sent the referral letters by facsimile to the DLEC. DLEC staff used the demographic information provided to determine the appropriate Early Head Start or Head Start agency for each child. DLEC then sent each referral to the appropriate agency, a critical step given the large geographic region served by the clinic. Ongoing meetings ensured continual improvement of the partnership and referral process.

Medical Provider Education. Medical staff received training on the importance of early childhood education programs, eligibility requirements, and the referral system process with two levels of intervention. First, an initial e-mail was sent to medical staff with a one-page summary on the new referral process. Faculty members were provided details at a monthly faculty meeting. A second intervention included a 1-hour in-person lunchtime training session offered to faculty and clinic staff by the primary investigator and the DLEC Early Head Start program manager.

Outcome Measures

Patient Demographics. The preintervention group included 223 patients. The postintervention group included 235 patients. The age, gender, and language status of the patients in each group were similar (Table 1).

Screening and Referral Rates to Early Learning Programs. We compared the documented rates of Early Head Start/Head Start screening and referral among eligible children under 5 years of age in the preintervention and postintervention periods (Table 2). Documentation of Early Head Start/Head Start screening improved considerably after the intervention, rising from 8% in the preintervention period to 46% in the postintervention period (odds ratio [OR] 10.5, 95% confidence interval [CI] [5.9, 19.4]). Providers also improved documented referrals to Early Head Start/Head Start for eligible children following the intervention. Early Head Start and Head Start documented referral rates rose from 1% in the preintervention period to 20% in the postintervention period (OR 18.3, 95% CI [5.7, 93.6]).

Head Start Enrollment and Parent-Reported Barriers. To determine enrollment status, we attempted to contact by phone all 42 patients in the postintervention group referred to Early Head Start/Head Start. Among the 32 successfully reached, six children (14%) had enrolled in Early Head Start/Head Start. Families reported the following barriers to enrollment: never contacted by the early learning agency (n = 14), qualifications not met (n = 2), parental work schedule interfered (n = 2), and transportation barriers (n = 1).

One-Year Follow-Up Referral Rates. One year after full implementation of the medical home–Head Start partnership referral system (July 2016), 78 (46%) additional patients in the postintervention group (not previously

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**FIGURE 1** Medical home–Head Start partnership screening, referring, and tracking steps to connect children aged 0 to 4 years receiving care in the medical home to local Early Head Start/Head Start programs.

**TABLE 1**

Demographic Characteristics of Children in the Pre- and Postintervention Groups

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Preintervention, July 1 Through September 30, 2014 (N = 223)</th>
<th>Postintervention, July 1 Through September 30, 2015 (N = 235)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (months)</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Female</td>
<td>45% (n = 100)</td>
<td>50% (n = 117)</td>
</tr>
<tr>
<td>Limited English proficiency</td>
<td>53% (n = 119)</td>
<td>53% (n = 125)</td>
</tr>
</tbody>
</table>
enrolled or referred during the initial 3-month study period) were referred to Early Head Start/Head Start at subsequent clinic visits.

**DISCUSSION**

This evaluation demonstrated that, using existing clinic and community resources, it is possible to connect families with appropriate learning programs by building a partnership, developing an integrated referral and tracking system, and educating medical providers and staff about accessing early learning programs.

Screening rates significantly increased from 8% at baseline to 46% following implementation. Early education referral rates showed a clinically and statistically significant increase from 1% to 20% among a high-risk pediatric clinic population. The ongoing benefits of the referral system over time were highlighted by the finding that after 1 year of full implementation, more than 50% of children in the intervention group had been referred to early learning programs. This finding illustrates the benefit of capitalizing on pediatricians’ frequent wellness visits with young children that offer multiple time points to connect families with early learning programs.

The overall aim in connecting families with early learning programs is to help enroll children in these programs. Approximately 14% of children referred during the initial time period were enrolled in Early Head Start/Head Start at the time of the program evaluation. Although this estimate was limited by the small sample size and challenges in contacting families by phone, it is comparable to a previous study evaluating a clinic-based referral system to Head Start, which reported that 25% of children referred were actively attending Head Start (Silverstein et al., 2004).

To our knowledge, this study is the first to describe and evaluate a medical home–community partnership model that uses existing clinic and community resources to facilitate referral and improve enrollment in early learning programs. Silverstein et al. (2004) demonstrated the benefits of streamlining this referral process to overcome physician and family barriers and increase early learning enrollment. This process was dependent on study personnel to facilitate the connection between the medical home and early learning program (Silverstein et al., 2004). Garg, Sarkar, Marino, Onie, and Solomon (2010) evaluated the Family Help Desk model to connect families with community resources during routine well-child care and found this to be an effective strategy to address social needs, including after-school programs, child care, employment, and housing using trained student volunteers.

Although not directly measured in this study, the referral system and partnership anecdotally provided opportunities for both medical providers and families to better understand the importance of early education and available community resources. Pediatric residents and faculty appreciated the opportunity to engage more directly with early education and having concrete approaches to offer families to facilitate enrollment in early learning programs.

The success of this medical home–Head Start partnership in our clinic serving predominantly low-income, Head Start eligible families may be a result of a collective impact approach. A collective impact initiative is defined as different sectors joining to tackle complex social problems by committing to a common agenda and focusing on cross-sector coordination (Kania & Kramer, 2011). The fundamental elements to support successful collective impact initiatives have

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**TABLE 2**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Preintervention, July 1 Through September 30, 2014 (N = 223)</th>
<th>Postintervention, July 1 Through September 30, 2015 (N = 235)</th>
<th>Odds Ratio [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider screened for Early Head Start/Head Start</td>
<td>17 (7.6%)</td>
<td>109 (46.4%)</td>
<td>10.5 [5.9, 19.4]</td>
</tr>
<tr>
<td>Children already enrolled in Early Head Start/Head Start at time of screening</td>
<td>Unknown</td>
<td>25 (10%)</td>
<td>NA</td>
</tr>
<tr>
<td>Children with documented referral to Early Head Start/Head Start program if not already enrolled</td>
<td>3 of 223 (1.3%)</td>
<td>42 of 210 (20.0%)</td>
<td>18.3 [5.7, 93.6]</td>
</tr>
</tbody>
</table>

NOTE: CI = confidence interval; NA = not applicable.
been established to include a common agenda, shared measuring systems, mutually reinforcing activities, continuous communication, and backbone support organizations (Kania & Kramer, 2011).

In our medical home–Head Start partnership, the key elements of collective impact included the common agenda of promoting early education by removing barriers to enrollment and improving medical provider knowledge of early learning programs. The partnership jointly measured its success based on the number of referrals and enrolled children. The mutually reinforcing activities were apparent as education and health care are interrelated and underlie the well-being of young children. Both organizations relied on one another to provide critical services. Ongoing communication and staff with dedicated roles within each organization were fundamental to the partnership’s successful referral system. Specifically, the clinic social worker directly sent referrals to the DLEC and tracked the status of these referrals. The DLEC served the important role of reviewing all referrals and determining the appropriate early learning program for each family. For children within the DLEC service area, DLEC staff provided close case management to facilitate enrollment into their programs. They communicated the status of each referral back to our clinic social worker and enabled easy exchange of information between the early learning program and the medical home.

The success of the Harborview Pediatric Clinic and the DLEC partnership also provides a framework in which to improve coordination with other early learning agencies. For families referred outside of the DLEC service area, multiple families and the clinic social worker reported lack of communication from these other early learning agencies as a significant barrier to enrollment. The medical home–Head Start leadership team has subsequently developed relationships with other local early learning programs to forge a common agenda and to offer guidance on how to best support enrollment for eligible children.

Many families identified additional barriers that were not addressed by this intervention. These barriers included transportation issues and work schedules that necessitated full-time child care. To overcome these issues, partnerships need to consider collaborating with other agencies outside of the education and health care sectors.

Last, while the partnership has improved communication between the health care and early education sectors, there is ongoing need for improvement, as highlighted in this project evaluation. Referrals required clinicians to go through multiple steps within the EMR to complete and document the screening and referral process. These then had to be processed by the social worker and sent by facsimile. Requests for wellness examinations and vaccine documentation required by the early learning program were also sent by facsimile and required time for clinic staff to complete. Critical pieces of developmental screening, social history, and medical issues obtained by both agencies were not easily shared between the two sectors. These identified issues are opportunities for ongoing cross-sector coordination between the medical home and early learning agency to ensure accessibility of early childhood education for all children.

Limitations

This project evaluation has several limitations. As a quality improvement initiative, we wanted all children to have access to the screening and referral as it was implemented, and so we did not conduct a randomized controlled trial. As such, this study has limitations similar to other pre- and posttest studies, such as the inability to control for exogenous changes over time, which may have affected the comparison groups differently.

The comparison groups were subject to variations within the medical home (staff change, clinic volume variations) and external changes within Early Head Start/Head Start regionally (number of programs, enrollment procedures). By selecting the same months of the year for the baseline and intervention periods, we sought to eliminate some seasonal variation in patient volumes and provider knowledge, especially given the many pediatric residents working within our clinic. The small sample size and difficulty contacting families limited the feasibility of fully determining enrollment rates and barriers to enrollment. Although the Harborview Clinic social worker maintained a registry of referred children, the early learning organizations were not consistently able to communicate referral status. This made it difficult to provide meaningful tracking or evaluation of those referred without searching the medical records and calling the families. The primary project leader was also a medical provider during the intervention time frame and participated in screening and referring patients.

Conclusions

Pediatricians have an instrumental role in ensuring child health and well-being. Connecting families with early learning programs is one strategy to promote early childhood development, especially for children living in poverty. This quality improvement project demonstrated the feasibility of using existing resources to develop a sustainable system to increase referral and enrollment of children in early childhood programs.
The key elements identified include partnership with local education programs, integration within the EMR, and medical staff education. The use of key elements consistent with a collective impact approach to address community needs likely contributed to the positive outcomes achieved.

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**REFERENCES**


