Developmental Screening in Community Health Care Centers and Pediatric Practices: An Evaluation of the Baby Steps Program

Patrick Shannon and Patti Rawding Anderson

Abstract
The Baby Steps Program (Easter Seals of New Hampshire, 2003) is a child-find program that introduces developmental specialists into health care settings to conduct developmental screenings with children during well-child visits. This article presents the Baby Steps Program model, summaries of screening and referral data, and the results of 3 focus groups designed to assess the viability of introducing this model in pediatric practices and community health centers. A total of 3,343 children received developmental screenings over 43 months. Several themes emerged from the focus groups that provided insights into conducting developmental screenings with health care practice settings. The Baby Steps Program was effective at identifying children eligible for early intervention, referring children to alternative community resources, and improving the capacity of health care providers to screen and serve children experiencing developmental delays.


The American Academy of Pediatrics estimates that between 12% and 16% of children have developmental or behavioral disorders (Committee on Children With Disabilities, American Academy of Pediatrics, 2001a). Primary care physicians are in a position to identify children with developmental delays and refer them to early intervention services because of repeated contacts with children and families, beginning at birth (American Academy of Pediatrics, 2006; Bernstein, Stettner-Eaton, & Ellis, 1995; Buck, Cox, Shannon, & Hash, 2001; Epps & Kroeker, 1995). Well-child-care visits are an ideal time to conduct developmental screening with children and to provide parent education and training regarding child development (Dinkevich & Ozuah, 2002; Glascoe, 2001). Pediatricians' and family practice physicians' identification and referral rates to early intervention providers have been low, although referral rates have been increasing in recent years (Bernstein et al., 1995; Minkovitz, Mathew, & Strobino, 1998; Pinto-Martin et al., 2005; Sand et al., 2005; Solomon, Clougherty, Shaffer, Hofkosh, & Edwards, 1994; Sonnander, 2000). In this article, we present findings from evaluation of the Baby Steps Program (Easter Seals of New Hampshire, 2003), a child-find program that introduces developmental specialists into primary health care settings to conduct developmental screenings with children who are birth age through 5 years old during well-child visits.

In the years since the passage of P.L. 99-457 (Amendment of the Education of the Handicapped Act, 1986), concerns have been raised about primary care physicians' lack of knowledge about developmental assessment and the availability of early intervention services (Epps & Kroeker, 1995; Helm & Shishmanian, 1997; Scott, Lingaraju, Kilgo, Kregel, & Lazzari, 1993). Hendrickson, Baldwin, and Allred (2000) reported that mothers of children with developmental delays indicated that their children's physicians lacked knowledge about developmental delays and early intervention programs. Buck et al. (2001) speculated that primary care physicians identify and refer only those children exhibiting marked delays in an effort to curb costs and to reduce parental anxiety. The ability of physicians to conduct developmental screenings, however, is hampered by constraints on time, lack of reimburse-
Developmental screening

THE BABY STEPS PROGRAM (EASTER SEALS OF NEW HAMPSHIRE, 2003). Two components of the evaluation are presented: developmental screening and referral data and results from three focus groups conducted with health care staff and professionals at three of the sites where the Baby Steps model has been introduced. The purpose of the focus groups was to gather in-depth information about the viability and acceptance of the Baby Steps Program at each of the sites as well as the perceived effectiveness at supporting primary care settings in conducting developmental surveillance, screening, and referral. The guiding research question for this study was, "Is the Baby Steps Program an effective model for identifying children experiencing developmental delays in pediatric practices and community health care centers?"

**Baby Steps**

The Baby Steps Program (Easter Seals of New Hampshire, 2003) involves the introduction of developmental specialists into community health centers, private pediatric practices, well-child clinics, and prenatal programs to work collaboratively with primary health care staff. The two developmental specialists in our research had masters degrees in their disciplines (i.e., physical therapy and occupational therapy) and over 10 years of clinical experience in early intervention and were well trained in family systems theory and transdisciplinary practice. The developmental specialists provided technical assistance, education, and support to primary health care providers to improve capacity for early identification and referral of children experiencing developmental delays to early intervention and other community providers. They also provided information, support, resources, and referrals for families whose children were identified with developmental concerns (Easter Seals of New Hampshire, 2003).

The Baby Steps Program has four premises. First, early identification of developmental needs should occur in the primary health care setting (American Academy of Pediatrics, 2006; Epps & Kroeker, 1995; Nelven, Hofkosh, Feldman, & Keller, 1997). Second, some primary health care providers could benefit from support related to the systems and processes regarding early intervention services (Buck, Cox, & Shannon, 2001; Shannon, 2004). The American Academy of Pediatrics' Committee on Children With Disabilities (2001b, 2006) has consistently recommended that pediatricians provide screening and evaluation for infants with established disabilities or those at risk of developmental delays and be aware of available community services and supports to assist families. Third, some primary health care practitioners do not have the training or the time to use screening tools in their day-to-day practice (Shannon, 2004). However, training in developmental pediatrics is now a standard part of most pediatric training programs. Last, vulnerable families who include children at risk have poor access to developmental information and supports (Buck et al., 2001; Hendrickson, Baldwin, & Allred, 2000).

The Baby Steps model involves five phases at a primary health care site: (a) engaging the site, (b) developing a collaborative implementation plan, (c) introducing the model to staff, (d) conducting developmental screenings, and (e) postscreening debriefing and referral. Each phase involves a series of related steps designed to infuse the Baby Steps model into the primary health care site. The process by which Baby Steps is introduced into community sites is tailored to the needs, practices, and protocols of each site.

To engage each site, the developmental spe-
Developmental screening

Specialists begin with relationship building with health care professionals by observing operations, developing relationships with staff, and assessing screening skills of staff. Next, Baby Step's staff works with a site to develop an implementation plan for Baby Steps. It is crucial to establish staff buy-in, and the model should seamlessly integrate with the natural workflow of each site. Issues such as approval to use the forms, location and timing of screenings, staff training, organization of joint well-child exams, and how referrals should be channeled need to be part of the implementation plan.

Next, training is conducted with each site to introduce the forms, screening tools, and procedures. During the training, when and how to conduct screenings are negotiated. Screenings can occur during the physical exam, with the physician, nurse practitioner, or physician's assistant present; prior to the medical exam so that concerns can be addressed with the health care practitioner; in a separate room, with details being shared during team meetings; or with the developmental specialists making all referrals and recording information in the chart.

Families are provided the option of access to the Baby Steps Program. Families must sign a consent form to participate. The screening process itself comprises several steps that occur throughout the primary health care visit. First, parents are asked open-ended questions about concerns they may have about their child to facilitate a conversation about their child's development. The developmental specialist observes the child, offering a few play activities prior to the physical exam. A dialogue continues during and after the physical exam. When a concern is noted, additional screening occurs using the Ages and Stages Questionnaire (ASQ; Bricker & Squires, 2001) or Age and Stages Questionnaire: Social–Emotional (ASQ SE; Squires, Bricker, & Twombly, 2002). These tools help parents understand the developmental needs of their child, prepare them for communicating with providers about their child's development, and provide a baseline for monitoring during subsequent screenings. Parents are given written and verbal feedback regarding their child's development in five key areas (cognition, language, gross–fine motor, social–emotional, and self-help).

Last, play activities are provided that are specific to the screening outcomes, and parents are given resources based on their concerns. Resources range from the identification of community-based play groups, parenting resources–classes, and library programs to head start, early head start, or referrals to early intervention, preschool special education programs, or mental health services. If a specific developmental delay is noted, the family is referred to early intervention services for a more thorough developmental assessment. To date, Baby Steps has been introduced into 15 settings, including 7 community health centers, a pediatric practice, a maternal and child health (MCH) program for families with no insurance, 3 child protective services (CPS) sites, and 3 well-child clinics.

Method

Screening and referral data were collected for the Baby Steps Program (Easter Seals of New Hampshire, 2003) over a period of 43 months. In addition, three focus groups were conducted with health care staff at three of the sites that participated in the Baby Steps Program. The purpose of these groups was to examine perceptions of Baby Steps by primary care providers, anticipated and unanticipated outcomes, systems change, and sustainability of the program.

Screening and Referral

Although the primary purpose of the Baby Steps Program was to screen children under the age of 3 years, there were screenings conducted with children over the age of 3 at each site. These screenings were conducted with children who had a potential developmental concern and had never received a developmental screening. A screening and referral instrument was developed to track developmental screenings at each site. The data sheet was completed by developmental specialists after each screening. Data were analyzed using the Statistical Package for the Social Sciences (SPSS, Inc., 2005). Developmental specialists were asked to track the child's age in months, gender, race–ethnicity, whether the visit was a first screening or a recheck, results of the screening (e.g., no concern or referred), where the child was referred (e.g., early intervention, schools, head start or early head start, medical specialist, private therapist, or other community resource), reason for referral (e.g., developmental delay, at-risk child, at-risk parent, resource needs, or socialization needs), what prompted referral (e.g., ASQ; Bricker & Squires, 2001, clinical judgment, parent concern, or other), if the referral...

©American Association on Intellectual and Developmental Disabilities
was completed, and whether the child was eligible for early intervention.

Focus Groups
This study used focus group methods as described by Krueger and Casey (2000). As part of the evaluation of this project, three focus groups were conducted with various health care providers. Two groups were conducted at community health care centers that provided health care for at-risk families and children and one group was conducted at a private pediatric practice. Each of the sites was located in the same county in New England, and each participated in the Baby Steps Program. There were 692 developmental screenings conducted at the first health care site, 466 at the second site, and 213 at the pediatric practice.

Nominal sampling was used to select participants. For each of the groups, contacts at each site identified a list of all physicians, nurse practitioners, nurses, referral coordinators, and staff. A packet of information that included (a) a cover letter requesting participation in a focus group, (b) a description of the study, and (c) an informed consent form was distributed to all potential participants. Groups of 7–12 participants were selected, and each interested individual was contacted with the date and time for the group. Groups were arranged over lunchtime at each site and lunch was provided.

Instrumentation
A semistructured interview schedule was used that included the following questions:

1. What were your perceptions of the Baby Steps Program? Did you find it useful?
2. How was the program incorporated into your practice? How effective was it with assisting practitioners with identifying developmental delays?
3. Were there any barriers to implementing the program at your site?
4. How did families respond/react to having the developmental specialists on site?
5. Did you benefit personally from participation in the Baby Steps Program? How so?
6. Is the Baby Steps Program worth sustaining at your site? If yes, what are some strategies for sustaining the program in your practice?

Procedure
Data collection for the focus groups occurred between May 1, 2004, and June 30, 2004. Each group was approximately 1–1.5 hr long. Participation ranged from 7 to 12 individuals. This study was conducted by two researchers: an assistant professor in social work and a masters of social work student. A training session was organized prior to data collection to instruct the research assistant on the procedures for conducting focus groups. The techniques for group facilitation, note taking, and the roles of each researcher were outlined during this training. This study was approved by the Institutional Review Board (IRB) at the University of New Hampshire.

Each focus group was conducted by two researchers. One researcher was the moderator, and the other researcher was the assistant moderator. The group moderator’s role was to introduce the topic, explain the ground rules, manage the group process, and ask questions and follow-up questions. The assistant moderator’s role was to record the setting, seating arrangements, responses, and nonverbal behaviors via field notes and to audiotape the sessions. The assistant moderator and moderator conducted debriefing sessions at the conclusion of each group to explore their impressions of group discussions. The assistant moderator expanded the field notes within 24 hr of each group using the audio recordings.

Data were analyzed using the qualitative data analysis software ATLAS.ti (Atlas.ti Scientific Software Development, 2004). Each researcher reviewed summary tables and assigned codes to recurring ideas or phenomena. The researchers then discussed the development of coding structures and the rationale for each code assigned. After a unified coding structure was agreed on, the researchers worked collaboratively to determine initial conceptual groupings (categories) of individual coded items. Five iterations of this process occurred before agreed-on categories emerged. Initially, 17 categories were agreed on, but additional analysis revealed overlap between 4 of these categories, so they were collapsed to 13 categories. Examples of categories included (a) sustainability, (b) community health clinic resource, (c) developmental specialist’s skills, and (d) barriers to implementation. The next level of analysis involved examination of the relationships between the categories to explore larger themes. Last, preliminary findings were presented to
Results

Screening and Referral

There were a total of 3,343 children who received developmental screenings from November 1, 2002, to June 30, 2005. Eight community health care centers accounted for 3,063 of the screenings (91.6%), 213 screenings were conducted at a pediatric practice (6.4%), and 58 screenings were conducted at three CPS sites (1.7%). Nine additional screenings were conducted by parents who self-referred to the program (0.3%). The age of children screened ranged from 1 day to 60 months of age (M age = 15.3 months). However, 2,888 of the children screened were 0–3 years of age (86.4%), 374 were more than 3 years of age (11.2%), and the age of 81 of the children was unknown (2.4%). The race–ethnicity of the children screened consisted of White/Caucasian (n = 2,550, 76.3%), Asian (n = 266, 8.0%), multiracial (n = 189, 5.7%), Hispanic–Latino (n = 169, 5.1%), African American/Black (n = 101, 3.0%), other (n = 4, 0.1%), and race–ethnicity was not recorded by 64 cases (1.9%). No developmental delays were suspected for 2,419 of the children (72.3%), and the remaining 924 children screened were suspected of or at risk for experiencing a developmental delay (27.6%) and were referred to early intervention for additional evaluation. Families were often referred to more than one provider, resulting in 1,168 total referrals, which exceeded the number of children referred. Many of the additional referrals were made to other community services for children who were experiencing delays believed to be below the 33.3% eligibility mark for early intervention as defined in the Part C rules in this state. The referral rate varied little between community health care centers (22.5%) and the private pediatric practice (20.2%).

Of the 924 referrals, 579 were made to community support groups (49.5%), 191 were made to early intervention (16.4%), 129 were made to other (unspecified) community support programs (11%), 93 were made to school districts (8%), 66 were made to medical specialists for additional evaluation (5.7%), 59 were made to head start or early head start programs (5.1%), and 51 referrals were made to private therapists (4.4%). Developmental screeners relied on three important sources for identifying potential developmental delays: (a) a standardized screening tool (ASQ or ASQ-SE), (b) parent-identified concerns, and (c) their own clinical judgment. Of the 1,168 referrals that were made, 933 resulted from a combination of a combination of scores from the ASQ and clinical judgment (79.9%), 121 resulted from parent-identified need (10.4%), and an additional 114 referrals were the result of clinical judgment alone (9.7%). The developmental specialists reported that referrals related to parent-identified need and clinical judgment alone were made to community support programs, medical specialists, or head start programs when it was clear the child was not experiencing a significant delay but the family was in need of support. A total of 185 early intervention referrals (15.8% of total referrals) were completed, and 146 children were found eligible for early intervention services (73.7%).

Focus Groups

The following focus group report provides a different lens with which to view the outcomes of the Baby Steps Program (Easter Seals of New Hampshire, 2003). Five general themes emerged that provided useful insights regarding the program’s ability to conduct developmental screenings within the context of three primary care practice settings. The first theme demonstrated how the Baby Steps Program contributed to the sites it engaged by filling in some service gaps. Second, some specific practices that the developmental specialists used were deemed effective by each health care site. Third, several of these effective practices were empowering for families. Fourth, participants in each group felt that the Baby Steps Program improved pediatric care in their practices. Last, Baby Steps and participating sites struggled with financial sustainability.

Filling in the gaps. Data from each of the groups indicated that a key to the success of the program was the commitment of the developmental specialists. One physician stated, “They are key to specific developmental quirks that we [physicians] would never see.” Another added, “They know the disability system in a way that we will never know it. They are our link and we would be lost without them.” Last, a pediatrician stated, “They are able to spend the time with parents that we cannot and are able to dig deeper into the core problems.” Participants also reported that the developmental specialists were able to build a level of trust that was difficult for the physicians to achieve. A nurse in one of the community health groups stated, “The...
Developmental specialists know these parents and they see them every 2 or 3 months. They have a great way with parents and the parents trust them implicitly.” A physician in the other community health group said, “It is less threatening for the developmental specialist to suggest early intervention than it is for a doctor to do it.” Last, a nurse practitioner in one of the community health groups stated, “The developmental specialists reinforce good parenting and they are great at initiating conversations about difficult things. They are positive with parents and say things like, ‘You are holding your baby in a very nurturing way’ or ‘your baby responds very well to the sounds of your voice.’”

**Effective practices.** Participants in each of the groups highlighted several practices used by Baby Steps that were considered effective, including flexible scheduling, accommodating practices of the developmental specialists, the ability to work with an interdisciplinary team, and use of outside resources. First, participants in each group commented about how the developmental specialists conducted their screenings within the framework of each practice. For example, one nurse said, “They come at predictable times that fit with our schedules, not theirs.” A nurse practitioner said, “We need them when we need them. We can’t always predict our needs. But, they are always here when we ask.” Second, a family practice physician remarked, “We function as a team and each of us knows our role. The specialists made a seamless transition and are important members of our team.” Last, participants in each group commented about the developmental specialists’ knowledge about resources in the community available to support families.

**Empowering families.** Baby Steps emphasizes services for families considered at risk, such as families living in poverty, single parents, teen parents, or parents with disabilities. Participants in each group felt that the program empowered at-risk parents and other parents in several important ways. First, participants believed that the developmental specialists worked with families in a supportive way to build their confidence. The following statement emphasized this point, “The developmental specialist’s emphasize what parents do well and gently guide them to address areas in which they could benefit from support.” This skill was perceived as especially important in the community health care centers where practitioners predominantly see high-risk families. A nurse emphasized this point when she said, “We have a lot of families on the edge. That is where Baby Steps fits in so well. They identify kids, can get through to resistant families, and get services started.”

Second, participants believed that the developmental specialists empowered families by “giving them some control back at a time when they have lost control,” as one participant stated. A pediatrician remarked, “They provide immediate services like information and education about what their child needs. They put parents at ease by telling them what is happening with their child and that something can be done about it.” Another participant added, “Parents are listened to and they are encouraged to talk about what is considered by many people to be a taboo subject—disability.” On a practical level, empowerment occurred when the developmental specialists told families what agency to contact and how to contact support groups, playgroups for their children, and services to which they were entitled.

The majority of the children screened either had a mild delay or no delay at all, and no referral was made to early intervention. Several physicians in all three groups were concerned that most children do not meet the 33.3% delay criteria in one or more developmental domains for early intervention. For example, a pediatrician from the private practice group stated, “Birth-to-three is such a critical age and we have a small window of time to prevent a lifelong catastrophe. We need to find a way to support the kids who do not qualify for early intervention.” The Baby Steps Program, however, provided essential support to these families. For example, the referral coordinator at one site stated, “The specialists do not refer to early intervention that frequently. Most of the referrals are to community groups, daycare, parent groups, or private therapists.” Sometimes, the developmental specialists simply eased the anxiety of parents. For example, a pediatrician stated, “First-time parents can’t judge their child’s developmental progress. The specialists take the time to talk with them and reassure them that their child is progressing normally. They validate their feelings while teaching them.”

**Improving pediatric care.** According to staff in all three sites, the Baby Steps Program had a positive effect on their health care practices. Physicians at each site commented that lack of time was an impediment to conducting developmental screenings. One pediatrician stated, “We just don’t have the time to do developmental assessments; we are limited to 15 minutes per patient.” Several participants
Developmental screening

P. Shannon and P. R. Anderson

pointed out that the developmental specialists helped them to cope with time constraints by providing the screenings in conjunction with well-child visits. Physicians believed that they were able to provide better quality care for their patients because of the presence of the developmental specialists. For example, a nurse practitioner said, “We screen well, but do not have the time. They screen better and they have the time.”

Participants felt that parent education was important, as this quote demonstrates, “Parents bring up concerns they have about development, behavior, and sometimes general parenting issues. Baby Steps provides in-depth, on-going, and follow-up education and support for families.” Follow up was emphasized by each group. The following statement was reiterated several times, “It is great to have follow-up resources. They can make sure the referral happened and if not they can find out why.”

A secondary benefit expressed by participants in each group was how much they learned about child development, assessment, and early intervention. The following statement characterized how many participants felt: “They were really excellent with our staff. I personally have learned so much about child development from watching them, reading their evaluations, and talking with them.”

In each of the settings, participants made statements that indicated that the Baby Steps model had been firmly integrated into their practice settings. For example, a nurse stated, “At this point, I would say that we are dependent upon Baby Steps. We don’t want to lose them.” One of the community health care practice participants stated, “We developed a new form that went from the developmental specialist to the physician, and from this we developed a process to determine action steps based on the outcomes of assessments.”

Sustainability. A challenging issue faced by Baby Steps has been financially sustaining the program. Although participants from the private pediatric practice group were ambivalent about sustaining the program, participants from the community health care centers expressed concern that Baby Steps may be cut from their centers. The issue for the private practice group was that simple, developmental screening is not a billable service. One pediatrician stated it this way, “If you can bring the service to us at no cost, we will do it. Otherwise, it is just not a high enough priority.” Another said, “We are not going to cut back on medical services to add developmental screening. This project helped to fill a niche, but it did not fill a huge gap.” Participants in the community health groups expressed a different perspective. One participant stated, “We need this program, our families need this program, our ability to serve our families will be compromised if we cannot continue with Baby Steps.” Another participant added, “It is about the well being of kids, that is why we need to make this work.”

Discussion

In many ways, the Baby Steps model operationalizes many of the 2006 American Academy of Pediatrics recommendations to health care professionals for developing practices that identify and address developmental concerns in children birth to 3 years (e.g., developmental surveillance at well-child visits, addressing developmental concerns promptly, using standardized developmental screening tools, and involving the whole office in the process). The screening and referral data highlight the scope of the services provided and the outputs generated by the Baby Steps Program (Easter Seals of New Hampshire, 2003). The data provide evidence of an acceptable screen positive to true positive rate (Sand et al., 2005). The 146 children referred and found eligible for early intervention services represented 5.5% of the total number of children screened, which is consistent with estimates of children believed to be eligible for early intervention (i.e., from 2.2% to 12% of all children; Sonnander, 2000; Trohanis, 1995). The screening and referral data failed to capture more in-depth information related to the services provided, how the program was perceived by program participants, and program outcomes. The combination of the screening and referral data with the perspectives of participants in the focus groups provides important lessons about conducting developmental screenings in health care practices.

The Baby Steps Program experience highlighted the importance of providing services to children and their families who were not eligible for early intervention services. The presence of developmental specialists in the primary health settings offered...
families access to knowledgeable professionals who were able to provide education and training to families, provide short-term intervention to bridge the gap between identification and referral to needed services, and referral to resources in the community such as parent support groups and playgroups. Without the presence of the developmental specialists, many families who had a child with a developmental delay who fell below the 33.3% criterion level may not have received such attention. In fact, the high positive rate from screening (27.6%) highlights a potential problem with the current eligibility criteria for early intervention. In many cases, a substantial enough delay was present that the developmental specialists felt intervention was warranted; therefore, referrals were made to early intervention. Another benefit was the ability of the developmental specialists to periodically recheck developmental status at subsequent well-child visits.

The service the developmental specialists provided supplemented the services traditionally offered in each practice, and this was recognized and valued by the health care staff. The specialists educated staff at each site about the importance of developmental screening and strategies for providing services to meet the needs of families that include children with disabilities. They highlighted the importance of conducting screening using multiple techniques, including direct observation, clinical judgment, parent report, and developmental screening instruments. The challenge faced by the Baby Steps Program was providing services for families whose children were experiencing delays but were not eligible for early intervention services.

The results of the preceding study can be tentatively generalized because of the use of the focus group method. This does not detract from the usefulness of the data but presents a recognized limitation. Future research should focus on the outcomes of the referrals to early intervention and other providers and community supports. We learned little about what happened to most of these families after they were referred. It is clear that funding programs for developmental screening within the context of primary health care practice is a challenge. However, a program such as Baby Steps appears critical, given the poor referral rates for children with developmental concerns, particularly those in high-risk populations, and the importance of addressing developmental concerns in the first 3 years of life.

References
Frankenburg, W. K., Dodds, J., Archer, P., Shapiro, H., & Bresnick, B. (1992). The Denver II: A major revision and restandardization of the


Received 11/8/06, first decision 4/17/07, accepted 10/17/07.

Editor-in-Charge: Steven J. Taylor

Authors:

Patrick Shannon, PhD (E-mail: pshannon@buffalo.edu), Assistant Professor, School of Social Work, University of Buffalo, 658 Baldy Hall, Buffalo, NY 14260-1050. Patti Rawding Anderson, MA, MS PT, Director, Easter Seals the Family Place, Raymond, NH.