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# Improving Early Child Developmental Screenings in a Primary Care Setting: A Quality Improvement Project

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IMPROVING EARLY CHILD DEVELOPMENTAL SCREENINGS IN A PRIMARY CARE  
SETTING: A QUALITY IMPROVEMENT PROJECT

by

MARLISCHA JACKSON

APPROVED BY DNP PROJECT ADVISOR/MENTOR

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### Abstract

A dramatic growth of physical, motor, cognitive, communication, emotional, and social development will occur during the first 3 years of life. Of children ages 3-17 years of age, 13% have some type of developmental or behavioral condition that goes undiagnosed before the age of 10. Children with multiple health and social risk factors, or those with chronic health disorders, are at a greater risk of developing early childhood delays or disabilities. In the United States, developmental screenings are only completed 21% of the time during well-child visits. Therefore, the purpose of this quality improvement project was to increase the adherence of health care providers' completion of developmental screenings at the recommended ages during well-child visits. The American Academy of Pediatrics recommends the use of validated screening tools for examining developmental delays and screening for autism at specific ages. For this project, the Parents' Evaluation Developmental Status and the Modified Checklist for Autism in Toddlers Revised were implemented into a primary care setting. The interventions included implementation of the 2 screening tools over a period of 3 months, administration of parent educational materials, and training on recommended screening schedules. Chi-square and descriptive analysis results concluded a significant improvement in screenings and referral rates. This project revealed that child development screenings could be implemented successfully into a busy primary care clinic without interrupting workflow. Completion of these screening provided an opportunity for parents and providers to work closely together to discuss any developmental concerns and ensure that referrals were processed as soon as issues were detected.

*Keywords:* autism, early child development, developmental screenings, health determinants, primary care.

Parents want to have healthy children and strive to provide the necessary interventions so their child can reach their maximum potential. Health care providers share the same responsibility in ensuring that children receive the proper care. Evidence-based research supports that keen surveillance and the use of standardized screening tools for child development have a significant role in ensuring that children are reaching their appropriate milestones. Additionally, research suggests that early interventions are introduced when children fall behind their developmental schedule (Centers for Disease Control and Prevention [CDC], 2017b). Boyle et al. (2011) defined developmental disabilities as a diverse group of severe chronic conditions that are due to mental and/or physical impairments. These disabilities can cause problems with language, mobility, learning, self-help, and independent living. Milestones are defined as the physical, motor, cognitive, communications, emotional, and social development for each respective age group (Office of Disease Prevention and Health Promotion, 2017). The standard definition of Autistic Spectrum Disorder (ASD) is defined as “the persistent deficit in social communication and social interaction across multiple contexts. The severity is based on social communication impairments and restricted, repetitive patterns of behavior” (Burns et al., 2017, p. 414).

Early detection and early intervention before the age of 3 years have shown to significantly improve a child’s development (CDC, 2017a). It is imperative that children reach their milestones because this can prevent a child from potentially falling behind in school activities (Office of Disease Prevention and Health Promotion, 2017).

### **Statement of Problem**

A local, urban pediatric clinic was chosen for this quality improvement project. It was rare for the health providers to use a formal, validated developmental screening tool, which

increased the possibility for developmental delays to not be recognized. Another concern was that many Texas insurance companies do not accept a referral if a formal child developmental screening was not documented in the patient's chart. Therefore, the parent had to be contacted on the phone to complete the screening tool, which was usually not done by a health care provider, but rather an administrator. This process increases the amount of time before the child is seen by a specialist to address the identified concerns.

### **Background and Significance**

On many occasions, child development screenings were not included in the well-child visit. Boyle et al. (2011) reported that 1:5 parents were questioned about their child's development during a well-child visit. In addition, 52% of health care providers informally asked parents about their child's development, and approximately 21% were formally screened using validated development tools (Mackerides & Ryherd, 2011; Rice et al., 2007). Furthermore, Rice et al. (2007) stated that symptoms of ASD can be found in children who are younger than 2 years of age, however children are not diagnosed usually until 4 years of age. A more current study by Christensen et al. (2016), found that the earliest median age to receive a comprehensive screening for ASD was at 40 months. Both studies pinpointed alarming statistics about child development screenings and noted there was a strong need to improve the child development program. Thankfully, many organizations have understood the ramifications of this problem. For example, the American Academy of Pediatrics (AAP), the CDC, and the Texas Department of State Health Services (TDSHS) have made tremendous efforts in refining the child development program. The Affordable Care Act also allows for developmental screenings to be incorporated into routine preventive care treatments during well-child visits (Rice et al., 2007).

In general, certain barriers have been identified as to why developmental screenings have not been completed. Reasons include having an overreliance on the physician's own clinical judgment, the lack of trust in the parents as thorough historians of their child's health, and the use of an invalidated checklist (Rice et al., 2007). Moreover, some studies reported that there was a lack of time to complete the screenings, that providers were uncertain about proper billing codes, that there was insufficient training on validated screening tools, and that providers were concerned regarding false identifications of disabilities (Rice et al., 2007).

There are several risk factors that may cause a disability or delay in a child's development. Health and socioeconomic conditions, poor quality prenatal care, and chronic disorders have a significant impact on the cognitive, physical, and behavioral development in children (Bitsko et al., 2016; CDC, 2017a). Further studies have proven that parents who lived in poor socioeconomic conditions lacked access to healthcare or community allocated services (Bitsko et al., 2016; De los Reyes-Aragon et al., 2016). Other examples include parents who had chronic mental illnesses and children who experienced chronic stress both had a high association with some type of developmental delay (Bitsko et al., 2016). Furthermore, children who lived in non-English-speaking homes were less likely to be diagnosed with a delay, and had poorer health outcomes overall, compared to those who lived in primarily English-speaking homes (Bitsko et al., 2016). Fields et al. (2016) concluded that infants who were diagnosed with a sickle cell disease (SCD) exhibited some type of developmental delay variance in their first year of life and had a decline of mental capacity up to 24 months. Also, children ages 7 to 18 months had problems with behavioral adaptability (Fields et al., 2016). Their data also revealed that cognitive deficits existed in children with SCD before reaching school age and continued to intensify with age (Fields et al., 2016).

The CDC (2017a) stated that genetic disorders, recreational drugs and alcohol could cause disabilities during pregnancy, inadequate prenatal care, and exposure to substandard environmental conditions such as lead toxins and cigarette smoking. Additional contributing factors included low-birth weight and premature infants could cause developing delays or disabilities (CDC, 2017a).

### **Assessment**

Prospective chart audits were conducted from January 2017 to April 2017. A total of 100 charts were reviewed to determine how many child developmental screenings and autistic screenings were completed prior to implementing a new process. The results showed that only 27% of the patients were completed prior to implementing a new process. Also, only 21% of children were screened with a validated autism screening tool. Furthermore, the audit revealed that providers did not perform screenings at the recommended children ages, according to the clinical practice guidelines (CPGs). Therefore, the clinic's staff worked collaboratively to incorporate child development screenings into practice, which correlated with the Texas requirements and national recommended practice guidelines.

### **Stakeholders**

Parents have the primary role in seeking help so that their child can receive early interventions. A research study conducted by Nelson (2013) described in further detail about how the increased amount of parent-child interactions resulted in the increased amount of parents' understanding of autistic behaviors and fostered the overall development of the child. In addition, parental involvement opened up an opportunity to provide positive behavioral reinforcement in a home setting where children were the most comfortable (Autism Speaks 2009; Nelson, 2013). Other studies found that home interventions programs, which allowed for

child developmental specialists to enter the home and assist with parenting skills, encouraged positive parent-child interactions, and had a greater impact on cognitive and motor skill development (De los Reyes-Aragon et al., 2016; Field et al., 2016). This demonstrates that caregivers are the primary stakeholders who will have the most influence on their children's development.

Other stakeholders include state and national health care organizations that want to ensure that children are receiving the best care. The TDSHS strive to assist Medicaid recipients up to 18 years of age with free medical services. They also have several educational tools that strengthen providers' knowledge on child development. Furthermore, national organizations such as Brighter Futures, the CDC, and the AAP all have useful resources where providers can hone in on the latest research studies and evidence-based tools for child development. Lastly, physicians, nurse practitioners, physician assistants, and nursing staff are also stakeholders because they can educate parents on concerning abnormalities. They also possess a wealth of information that brings evidence-based information to the clinical setting so that safe and effective practices are implemented. Overall, it is important that each stakeholder work together to implement effective interventions so that children will receive early treatment.

### **Readiness for Change**

Unfortunately, it can be difficult to implement change. It is essential for staff members to be comfortable, motivated, and be willing to change their common practices before starting the implementation process. It was necessary to assess the clinic's readiness for change by conducting a SWOT analysis (strengths, weaknesses, opportunities, and threats). The analysis was done prior to implementing the new change. Negative and positive factors were well thought out to predict if the new change would achieve successful outcomes (Laidre, 2011).

This clinic had some strengths noted before starting the project (Appendix A). The owner of the clinic supported the idea for the new processes. It was important to have the organization's key leaders to support the onset of new projects. In addition, they met weekly to discuss other quality improvement projects. This provided time to discuss any concerning issues that occurred during the implementation process.

The SWOT analysis revealed opposing factors: the clinic was a fast-paced environment, had a high volume of patients with multiple demands, and staff members were often overwhelmed because they were required to manage multiple tasks in an insufficient amount of time. Another barrier that noted concerned was the staff members' willingness to change. Many staff members welcomed change in the beginning, but did not follow through with the new changes over an extended period.

On a positive note, the SWOT analysis found that long waits times can be used as a teaching opportunity to educate parents about child development, give out educational pamphlets, and to complete developmental questionnaires. Other threats noted were the low literacy level of the population and non-English speakers, which may make it difficult for patients to complete the questionnaires. In addition, patients faced social and health risk factors that prevented them from getting to their appointments in a timely manner or to access care. Finally, cultural beliefs could prevent parents from answering the questionnaires truthfully because of the fear of being stigmatized. It is known that in the Latino culture, mental health conditions or disabilities are often not acknowledged or considered as medical conditions. They are usually considered shameful and embarrassing. Zuckerman et al. (2014) described male Latino fathers to have a *machismo* attitude and to have the tendency to fear their male sons of being labeled as weak. This attitude and to prevents parents from answering questions honestly

or prevents communication with the provider about any pressing issues (Zuckerman, et al., 2014). These examples are all factors that can create challenges and opportunities for this clinic to be successful since it serves a large Latino community.

### **Project Identification**

#### **Purpose**

The purpose of this quality improvement project was to increase the adherence of the providers' use of developmental screenings, the Parent's Evaluations Development Status (PEDS) and the Modified Autism Checklist in Toddlers-Revised (M-CHAT-R) as per the AAP (2017) and CDC (2017) clinical practice guidelines. These screening tools helped to identify any concerning delays or disabilities that can be found in children during developmental stages. Furthermore, these screenings help providers improve their decision making on when to refer a child for specialty evaluation. Lastly, the use of screenings increases the provider-parent communication by openly discussing concerning potential developmental delays or other health issues.

#### **Objectives**

- Implement the PEDS screening tool during ages 9, 12, 18, 24 or 30 months well-child visit.

*Rationale:* A formal validated screening should be used at periodic well-child visits at specific ages to detect possible developmental delays (AAP, 2017; CDC, 2017b).

- Implement the M-CHAT-R screening tool during the well-child visit when they are 18, 24, or 30 months of age.

*Rationale:* A formal validated screening tool should be done at 18, 24, or 30 months during well-child visits to detect early stages of autistic spectrum behaviors (AAP, 2017; CDC, 2017b).

- Ensure that referrals are submitted within 7 days of abnormal screening results.

### **Anticipated Outcomes**

- Increase the use of PEDS screenings by providers from 27% to 80 %.
- Increase the use of the M-CHAT-R by providers from 21% to 80%.
- Increase early referrals rate of positive screening test from 15% to 80%.

### **Strength of Evidence**

Currently, childhood disabilities and delays are a national health care issue. To examine further details about this problem, a literature review was conducted. In 2006-2008, Boyle et al. (2011) reported that the prevalence of developmental disabilities was 17.1%. This equated to approximately 1.8 million more children that were identified with a possible developmental delay during this study. In addition, male children had twice the prevalence of any developmental disabilities than females and higher prevalence of attentive deficit hyperactive disorder, autism, learning disabilities, and stuttering/stammering (Boyle, et al., 2011).

Christensen et al. (2016) found that one in 68 children aged 8-years-old, who lived in an Autism and Developmental Disabilities Monitoring Network, had autistic symptoms which significantly increased it's prevalence from 2002 to 2010. In addition, this study shown that 78% of Latino children had a prior ASD diagnosis or classification compared to non-Latino white children (82%) and non-Latino black (84%) (Christensen et al., 2016). Regrettably, the study also noted that most screenings were not done at the recommended ages (Christensen et al., 2016). The study also addressed the disparities concerning race and ethnicity. Hispanics children were

screened less often compared to non-Hispanic white children. In addition, studies have shown that in the Latino population the lack of access to healthcare due to low income, non-citizenship, and language barriers were all the contributing factors to the disparities (Christensen et al., 2016; Zuckerman et al., 2014).

There were multiple social determinates that interfered with how parents helped their children cope with their disabilities. Emerson & Brigham (2014) conducted a multivariate logistic regression study that estimated the correlation of the children with developmental delays and the rate of exposure to various social determinants. Low socioeconomic status had a significant impact on parenting difficulties and was associated with poorer outcomes for children with developmental delays (Emerson & Brigham, 2014). Children who were abused/neglected, with single-parent families who experienced a recent separation/divorce of parents, or with parents who abused alcohol/drugs had a significant increased incidence of negative outcomes (Emerson & Brigham, 2014).

Developmental disabilities and ASD have also created an economic strain on the health care industry and on the family members who care for children who have chronic developmental disabilities. In 2011, Lavelle et al. (2014) conducted a regression analysis on the association between ASD diagnosis, cost, and demographic characteristics. It was found that ASD related costs were approximately 11 billion dollars to 61 billion dollars annually, which represented the direct and indirect costs of medical care, special education, and loss of parent productivity (Lavelle et al., 2014). It was concluded that the cost to provide care for children with disabilities is burdensome not only to families but to the health care system as well.

Field et al. (2016) conducted a longitudinal cohort study on 35 participants that described how children with SCD required more extensive care and experienced cognitive delays during

the first 2 years of life. The study went on to explain that home-based programs facilitating parents' involvement with their child improved developmental outcomes and promoted a positive, nurturing parent-child environment (Fields et al., 2016). Results on the study demonstrated a significant increase in cognitive and expressive language using the Bayley Scales of Infant and Toddler Development 3rd Edition screening tool (Fields et al., 2016).

Finally, a study by Zand et al. (2015) found that young mothers who were poverty-stricken and lacked formal education did not understand normal patterns of child development stages. It was found that African American and Hispanic populations were less aware of these concepts (Zand et al., 2015). The study's findings suggested that interventions that enhanced parental education on child development were successful strategies in addressing the issue (Zand et al., 2015).

## **Methods**

### **Project Interventions**

**Design.** In this quality improvement project, pre-and post-retrospective chart reviews were conducted from January 2017 to August 2017. The electronic health record was accessed under the compliance of the Health Insurance Portability and Accountability Act by using a security passcodes. Also, using a coded numeric system protected the identity of the individual patients. The University of Incarnate Word Institutional Review Board approved the project.

**Setting.** The pediatric clinic is located on the southwest side of San Antonio, TX. The primary clinic was in the heart of the community and treats many of the local families with children ranging from newborn to 18 years of age. The clinic had associations with local hospitals and health facilities in the area and ancillary services were often used.

**Sample.** The patient population of this clinic is predominately Latino, followed by Caucasian/non-Latino white, and a small percentage of African American/non-Latino black. The primary language spoken by the families is English, followed by a mixed use of English-Spanish, and a small fraction of Spanish speaking only. Most of the patients were Medicaid recipients. This demographic information was retrieved from the electronic health record.

**Education.** Providers and clinic staff were given a Power Point presentation that explained the importance of child development screenings. Instructions were given on how to use developmental screening tools, which included when to administer the test and how to score each tool. A continuity binder was kept at the nurses' station as a reference tool. Also, the providers were educated on how to assign a proper billing code for each screening. The ICD 10 identification code 96110 and 96110 U6 modifier is coded for the M-CHAT-R. This ensured proper reimbursement for their services.

Parents were also educated during the well-child visits. The screenings were questionnaires that facilitated discussion between the parents and provider over any health concern. In addition, each parent was given a take home pocket sized pamphlet that described normal childhood development milestones from infancy to 5 years of age.

**Planning.** A critical aspect for this project to be successful was the incorporation of the screening tools into the providers' workflow. The new process must be uncomplicated and trouble-free. Therefore, the first part of the planning process started with creating a weekly timeline that displayed when each intervention would be implemented. The CDC (2013) *Pediatric Development Screening Flowchart* assisted on how the screening tools would be integrated into the clinic's workflow prior to executing the project (Figure 1).

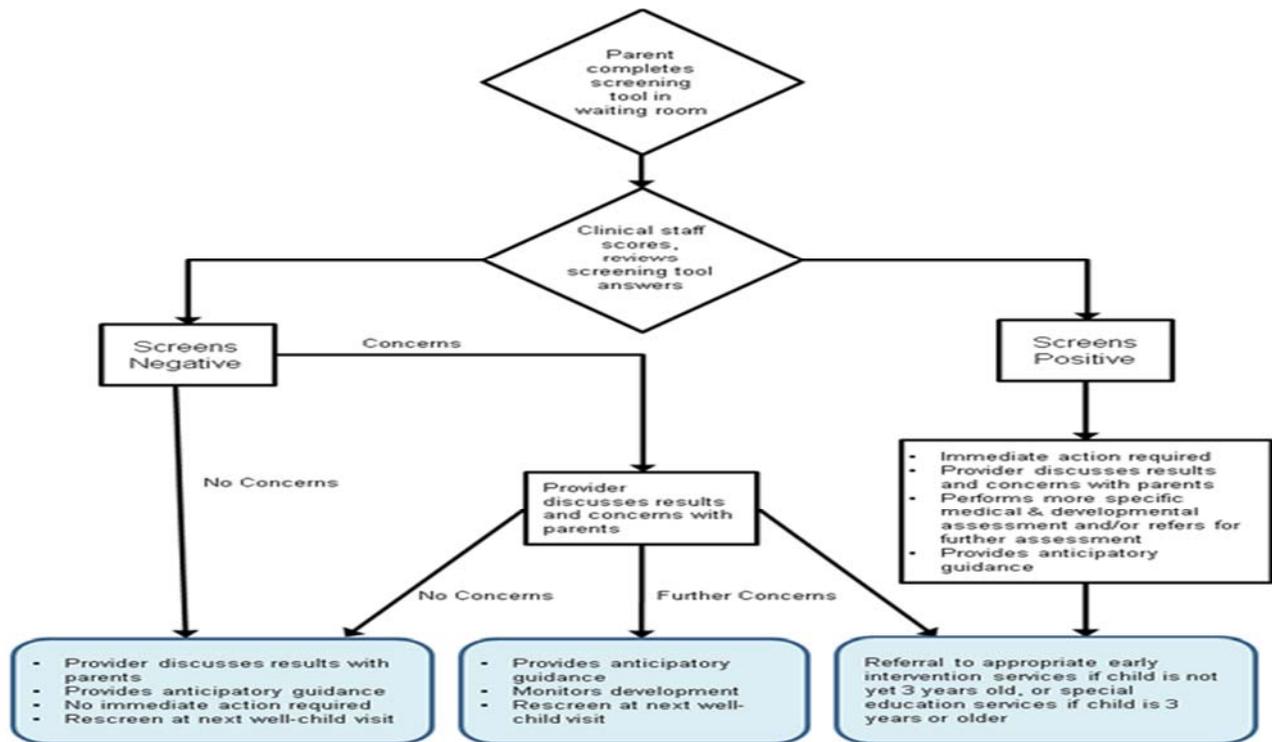


Figure 1. This algorithm explains how to incorporate a child developmental screening tool into a primary care setting. Adapted from “Pediatric Developmental Screening Flowchart.” by the Centers for Disease and Control. Copyright 2013 by the CDC. Reprinted with permission.

The secretaries held a key role in the clinic because they were the first point-of contact when parents entered the clinic. The secretaries developed a visual aid that tracked which ages needed either a PEDS or M-CHAT-R screening (Figure 2).

This form was posted at each individual workstation. Also, the secretaries created two separate folders that established a dissemination method, which included both English and Spanish questionnaires. Upon arrival, the secretary gave the parent the required packet that reflected the age of the child and the preferred language that was spoken by the parent. The packet included a questionnaire form and a score sheet. The questionnaire was on the first page

1 mo	Hep B #2						
2 mo	DTaP #1	Hib #1	PCV 13 #1	IPV #1	Rota #1		
4 mo	DTaP #2	Hib #2	PCV 13 #2	IPV #2	Rota #2		
6 mo	DTaP #3	Hib #3	PCV 13 #3	IPV #3	Rota #3	Hep B #3	Flouride
9 mo	catch up	Flouride	PEDS				
12 mo	Hep A #1	PCV 13 #4	MMR #1	Varicella #1	Hgb/Pb	Flouride	PEDS
15 mo	DTaP #4	Hib #4	Flouride	PEDS			
18 mo	Hep A #2	Flouride	PEDS/MCHAT				
2 yr	catch up	Hgb/Pb	Flouride	PEDS/MCHAT			
30 mo	Flouride	PEDS					
3 yr	PEDS						
4 yr	DTaP #5	IPV #4	MMR #2	Varicella #2	PEDS		
5 yr	PEDS						
6 yr	Hgb/Pb	PEDS					
11 yr	TDaP #1	MCV4 #1	HPV #1				
			HPV #2	6 months after 1st			
15 yr	3 dose HPV series if started at age 15 or later						
16 yr	MCV4 #2						

Figure 2. The Clinic’s Periodicity Schedule. This pediatric periodicity schedule was used in the clinic. It was comparable to the 2016-2017 CDC immunization schedule and Texas Health Step periodicity schedule. The two developmental screening tools were added as a reminder of when to screen children at the recommended ages.

of the packet and the parent was instructed to complete the first page only. Once completed, the parent would hand back the questionnaire (packet) to the secretary and the secretary would place it into the provider’s inbox. The provider reviewed and scored the questionnaire (s) before entering the exam room. While in the exam room, the provider would discuss the answers that were provided by the parents. This gave an opportunity for parents to voice their concerns and providers could give immediate feedback. Each screening tool recommended guidance to determine if a referral should be completed or suggested that only a follow-up appointment was required at this time.

In the initial stage of the project, small adjustments were made to help smooth the process. At one point in time, the questionnaires began to accumulate into piles and they were not scanned into the electronic health record in a timely manner. The office manager instructed for the secretaries to incorporate scanning into their daily task tracker. Eventually, this prevented the questionnaires from being lost and scanned in a timely manner.

## Results

### Data Collection

A retrospective chart review was conducted between June 2017 through August 2017. A total of 142 charts were reviewed for all pediatric patients that were ages 9, 12, 18, and 24 months. During the implementation, weekly reviews were conducted over 10 weeks to assess clinician adherence to AAP (2017) clinical practice guidelines. Three quality improvement meetings were coordinated to identify barriers and facilitators and provided a forum for staff feedback. Using IBM Statistics 24, descriptive and chi-square analysis were used for data collection.

Objective 1: Increase the PEDS rate from 27% to 80%. The PEDS completion rate rose to 90.1% in the post-intervention data. A chi-square demonstrated that there was a significant association between the duration of the project and the PEDS completion rate,  $X^2(2) = 16.61, p = .000$ . Over the duration of the project this screening tool became more accepted to practice (Table 1).

Table 1

*Chi-Square Tests: The Duration of the Project and the PEDS*

*Completion Rate*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.607 <sup>a</sup>	2	.000
Likelihood Ratio	15.619	2	.000
Linear-by-Linear Association	10.504	1	.001
N of Valid Cases	142		

Objective 2: Increase the M-CHAT-R rate from 21% to 80%. The M-CHAT-R completion rate rose to 52% in the post-intervention data. A chi-square test demonstrated that there was no significant association between the duration of the project and the M-CHAT-R completion rate,  $X^2(4) = 6.98, p = .137$  (Table 2).

Table 2

*Chi-Square Tests: The Duration of the Project and the M-CHAT-R Completion Rate*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.983 <sup>a</sup>	4	.137
Likelihood Ratio	7.418	4	.115
Linear-by-Linear Association	.543	1	.461
N of Valid Cases	142		

Objective 3: Increase the referral completion rate from 15% to 80%. The referral completion rate rose to 68% in the post-intervention data. A chi-square revealed that there was a significant association between the duration of the project and the referral completion rate,  $X^2(6) = 23.33, p = .000$  (Table 3).

An additional test was completed. There was a 35.0% completion rate when both screenings were required, which were at ages 18 and 24 months. An additional chi-square test showed that there was no significant association between the duration of the project and when both the PEDS and M-CHAT-R were required during the well-child visit,  $X^2(2) = 3.38, p = .185$  (Table 4).

Table 3

*Chi-Square Tests: The Duration of the Project and the Referral Completion Rate*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	25.329 <sup>a</sup>	6	.000
Likelihood Ratio	25.735	6	.000
Linear-by-Linear Association	11.559	1	.001
N of Valid Cases	142		

Table 4

*Chi-Square Tests: The Duration of the Project and the Completion of Both Screenings*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.377 <sup>a</sup>	2	.185
Likelihood Ratio	3.093	2	.213
Linear-by-Linear Association	2.434	1	.119
N of Valid Cases	142		

Overall, the completion of the PEDS developmental screening tool was utilized the most at the primary care clinic. The M-CHAT-R rates increased post-intervention; however, more emphasis is needed to use this screening tool on children who are eligible to be screened. Also, the referral completion rate improved significantly, which resulted in a more efficient referral process.

### **Discussion**

This project allowed for two validated developmental screenings to be incorporated into the primary care setting with minimal interruption of patient care. A workflow sheet gave step-by-step guidance on how to smoothly incorporate the developmental screenings into practice. The literature supports the argument that integrating child developmental screening tools into practice can be too time consuming (Rice et al., 2007). The results of this project revealed that there was a decrease in the use of the developmental screenings when two screenings were initiated during a well-child visit. It is safe to say that too much paperwork can consume a significant amount of time instead of interacting with the family. Nevertheless, the results showed that at least one validated screening tool was implemented successfully into the work setting. The significance of the M-CHAT-R should be continually reinforced to the providers.

Another barrier that was identified by Rice et al. (2007) suggested that the providers' comfort level for administering and interpreting the developmental screening tools prevented the use of them in practice. This project took an enough time to educate providers on how to use and score results. This eliminated confusion so providers could use them quickly and efficiently without the interruption of workflow.

Lastly, there was a significant improvement of processing referrals after children received a positive screening. The old process created a time lapse before the child was seen by a specialist to address the identified concerns. The new process allowed for the developmental screening tools to be part of the electronic health record and can be electronically sent to the insurance companies with minimal delays. In addition, the new process allowed for referrals to be compliant with the insurance requirements.

**Limitations**

The only limitation identified in this project was related to the clinic's function and clerical processes. During the project implementation, one of the major pieces of office equipment (scanner) broke down and took an extraordinarily long time to repair. The lack of the scanning ability triggered the misplacement of documents, prevented referrals from being initiated, and prevented billing charges from being processed in a timely manner. Texas insurance companies require that developmental screenings be documented in the patient's chart and will not process referrals without documented proof of need. Thus, a work-around created by the clerical staff, reverted back to the original way of screening via telephone by unqualified personnel. Furthermore, scanning documents into the electronic health record led to an increased workload for the clinic secretaries. Initially, the additional workload responsibilities hindered the project implementation; however as staff became accustomed to the new workflow process, the limitation resolved itself with minimal intervention.

**Recommendations**

Electronic developmental screenings that are integrated into the electronic health record can provide a more efficient process by saving time and reducing cost. Electronic screening tools can automatically calculate the total risk score, which will ultimately save time for the provider. Furthermore, eliminating the time to print paper copies can cut cost by reducing the amount of paper that is used. Referrals can be processed electronically thus preventing documents from being lost and insurance companies can receive them within seconds. Providers can quickly review screenings completed by parents and provide immediate feedback. However, not all primary care clinics will have this luxury because updating an electronic health record can be costly. In the end, using paper copies is always an option; however, staff must be trained on the

importance and requirements to maintain the integrity of the patients' medical record so that the continuity of care will not be breached.

### **Implications**

Evidence-based research supports that both providers' and parents' keen surveillance, parental involvement, and the use of standardized screening tools for child development have a significant role in ensuring that children are reaching their appropriate milestones. Young children who experience social, health, and economic disparities are at a higher risk to experience development delays. Positive patient outcomes are dependent on recognizing developmental delays early. The project provided an opportunity to empower parents to voice their concerns about their children's development by adopting a timely and efficient screening process in accordance with the national guidelines. The collaboration of parents and health providers working together to identify developmental delays is extremely important for optimal child health.

Implementing and adhering to recommended evidenced-base guidelines is one way that the DNP prepared APRNs can play a significant role in mitigating the negative outcomes associated with the lack of identification or early intervention with childhood developmental delays. In addition, the DNP worked with multiple disciplinarians to help execute the new process. The value of intra-professional collaboration enabled staff members to address their concerns, which molded the new process to match the clinic's culture and routine practices. Overall, the DNP was able to use keen leadership and organizational systematic thinking to improve quality healthcare that was delivered to a pediatric population.

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## Appendix A

## SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• The owner and staff members supported the new change/process.</li> <li>• Staff members have a strong camaraderie, which fosters team collaboration.</li> <li>• Team leaders met regularly to discuss QI process/improvement topics.</li> <li>• Team leaders allowed time for people to learn new processes.</li> <li>• Providers understood CPGs.</li> </ul>	<ul style="list-style-type: none"> <li>• The clinic was busy and fast-paced-prevented staff from doing extra responsibilities.</li> <li>• Double booking-extended work days.</li> <li>• The lack of time-not given enough time to meet all patient's needs.</li> <li>• Dual roles filled by staff members.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Longer wait times gave an opportunity for the parent to complete screening questionnaires.</li> <li>• Time to read through educational materials before seeing the provider.</li> </ul>	<ul style="list-style-type: none"> <li>• Communication barriers: low literacy level/non-English speakers-difficulty understanding the questionnaires.</li> <li>• Health and social factors: inaccessibility to health care/no insurance.</li> <li>• Single parenting.</li> <li>• Culture: fear of being stigmatized/hesitant to complete questionnaires.</li> </ul>