

THE EARLIER THE BETTER:

Developmental Screening for Connecticut's Young Children

By: Lisa Honigfeld, Ph.D.

Judith Meyers, Ph.D.

Prepared for the Connecticut Early Childhood Education Cabinet



IMPACT

Ideas and Information
to Promote the Health of
Connecticut's Children

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Information about the Child Health and Development Institute can be found at www.chdi.org or by contacting the program at:

270 Farmington Ave., Suite 367
Farmington, CT 06032
Phone: 860-679-1519

THE EARLIER THE BETTER:

DEVELOPMENTAL SCREENING FOR CONNECTICUT'S YOUNG CHILDREN

Prepared by Lisa Honigfeld & Judith Meyers
Child Health and Development Institute of Connecticut
for the Health Promotion Workgroup of the Early Childhood Education Cabinet

INTRODUCTION

The Connecticut Early Childhood Education Cabinet's Health Promotion Workgroup leadership approached the Child Health and Development Institute of Connecticut (CHDI) to prepare a report on developmental screening for young children ages birth to five. They knew that too many children were arriving at kindergarten not ready for school. Many had undiagnosed developmental delays or behavioral problems and had missed age-limited opportunities that could have addressed their developmental and socio-emotional issues. Although a number of screening efforts exist in the state, the members of the Workgroup recognized that developmental screening of young children could be better coordinated and aligned. To help inform their work moving forward, they looked to CHDI to gather and report information on:

- the importance of early detection of developmental and socio-emotional delays
- the value of detecting children at risk in the very earliest years
- screening as a strategy for early detection
- available screening tools and their implementation across a variety of settings in Connecticut.

The report addresses each of these topics and concludes with the authors' recommendations for ensuring that Connecticut's young children receive periodic and comprehensive screening. Early detection through screening is the gateway to assuring children get the support they need to ensure their optimal growth and development.

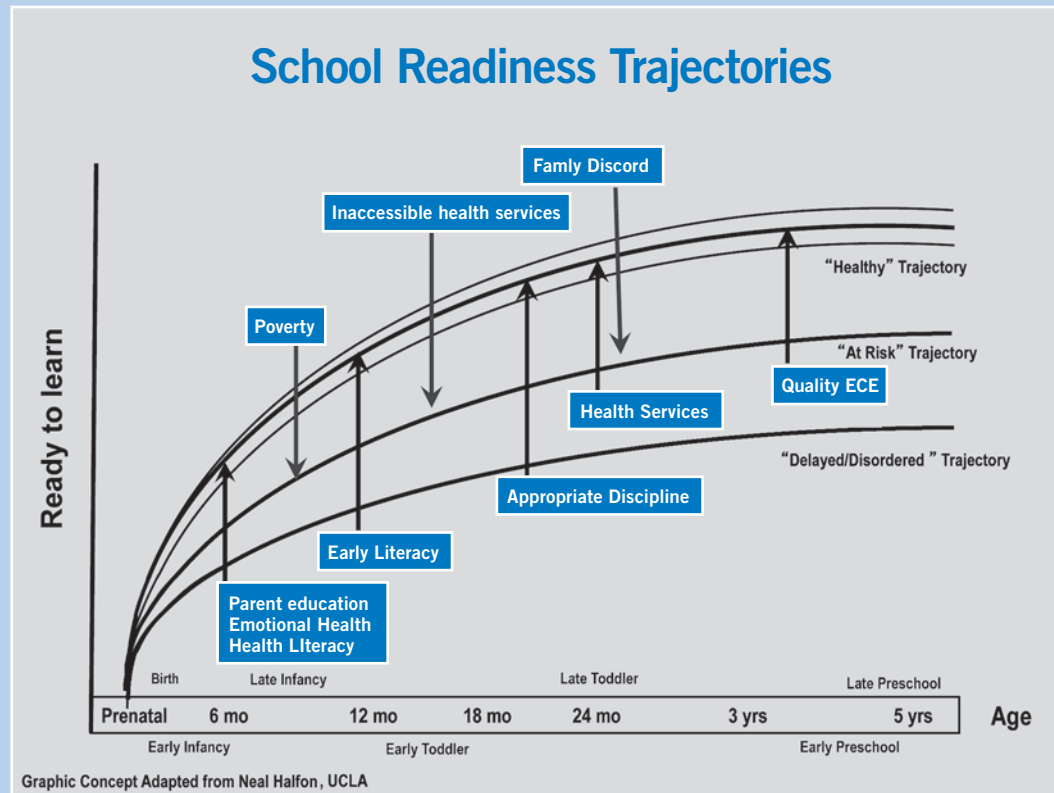
THE EARLY YEARS ARE CRITICAL

Numerous studies have documented the importance of healthy development in the very earliest years of life to children's educational and life outcomes.¹ There is very little doubt that children who experience delays in their early development continue to perform below the level of their typically developing peers as they age, resulting in poorer educational, social and general life outcomes. Children at risk, without detectable delays but with familial and environmental circumstances associated with delays, also experience challenges in keeping pace with their peers upon school entry and throughout their school years.

In order to ensure that children can maximally benefit from school, they need to arrive at kindergarten ready to learn with appropriate developmental skills. A large national study of 22,000 children in kindergarten found that 56% lagged in kindergarten skills as reported by their teachers and parents.² Children's developmental status is the sum of many factors including conditions of pregnancy and birth, family structure and functioning, health, socio-economic factors, learning opportunities and inherent abilities. The trajectory of children's development highlights three major categories of children: 1) those who are typically developing, 2) those who are at risk for delayed development, and 3) those whose development is behind those of their peers.³ (See Figure 1)



Figure 1: School Readiness Trajectories



The placement of the boxes indicating factors that impact which trajectories children follow are not spaced to reflect associated ages of intervention. All factors influence children's development across the trajectory.

The factors that impede healthy development are concentrated among children who are at greatest risk for poor developmental and socio-emotional outcomes. These often are children who live in poverty and in families experiencing conditions such as domestic violence, mental illness and substance abuse or homelessness. Research shows that children who live in poverty are at an increased risk of developmental delay and learning disabilities.⁴ An especially vulnerable group are those in the child welfare system who have experienced abuse and/or neglect. Estimates are that one fourth of these children younger than three have significant delays

in motor development and even more have language and cognitive delays. The majority of these children are reported for neglect, which is highly associated with living in impoverished conditions.⁵

Other factors, such as quality early care and education and supportive parenting, promote positive developmental and socio-emotional outcomes. In addition to the factors identified in Figure 1, strength-based approaches to services for children that are supported by strong public policy can outweigh the negative influences of poverty and family dysfunction if begun at an early age.⁶



THE POPULATION OF CHILDREN WITH AND AT RISK FOR DEVELOPMENTAL DELAYS

The value of providing services and supports to children with signs of early delay and their families cannot be over-emphasized; it pays off many times over in school performance and life outcomes.⁷ To assure that every child has the opportunity to develop along the top trajectory in Figure 1, it is imperative to identify those with documented delays and disabilities as early as possible, as well as those at risk for delay due to family and social circumstances. The gateway to assuring these children receive supports is early detection through screening.

Children born with diagnosed disabilities and delays may not need periodic screening but their early connection to intervention services is essential. There are varying estimates of the number of children who have developmental disabilities or handicapping conditions that will impact their learning. According to 12 years of parent responses to the 1997 to 2008 National Health Interview Surveys, the proportion of children ages 3 to 17 who have disabilities increased from 12.84% in 1997 to 15.04% in 2008. Diagnoses or conditions include: Attention Deficit Hyperactivity Disorder, intellectual disability, Cerebral Palsy, Autism Spectrum Disorders, seizures, stuttering or stammering, hearing loss, blindness, learning disorders and other developmental delays. Children from low-income families and those insured by Medicaid were more likely than other children to have a disorder reported.⁸

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For children younger than three, language delays are the most commonly reported, with estimates ranging from 13% of children younger than two to 17% of children ages two to three.⁹ About 6% of young children have attention disorders,¹⁰ and 8% have learning disabilities according to parental reports.¹¹ Other disorders in young children as reported in 2003 include: cognitive delays (12 per 1,000 children), autism spectrum (6.7 per 1,000 children, with higher estimates reported in 2012),¹² cerebral palsy (2.3 per 1,000 children) and hearing loss (1.2 per 1,000 children).¹³

These estimates barely touch on the number of children not being ready for school due to socio-emotional concerns. Between 9.5 and 14.2 percent of children between birth and five years old experience social-emotional and behavioral problems that affect their language development,¹⁴

functioning, and school-readiness.¹⁵ The Early Childhood Longitudinal Study estimated that about 1.2 million, or 31%, of all kindergarteners lagged behind their classmates in socio-emotional skills according to ratings by their teachers and/or parents.

Another group of children for whom early detection through screening is important are those at risk due to psychosocial factors such as family and environmental conditions that impede optimal socio-emotional development, learning and school readiness.¹⁶ These include Limited English Proficiency among parents, parent mental illness, multiple moves and high stress environments including homelessness, domestic violence, substance abuse, and poverty. Related to socio-emotional screening is “psychosocial screening”, which addresses family and environmental risk factors that impede optimal socio-emotional development, learning and school readiness.



EARLY DETECTION IS THE KEY TO ACCESSING SERVICES

In light of the broad array of factors that compromise children's school readiness and the availability of development services to help young children, it is especially worthwhile to identify children with, and at risk for, development and socio-emotional delays and link them to services as early as possible. Children with delays can benefit from Part C of the Individuals with Disabilities Education Act (IDEA)¹⁷ programs. Part C requires all states to provide Early Intervention (EI) services for children ages birth to three with delays and disabilities. The law also mandates services for children ages three to five (Part B). In Connecticut, the Department of Developmental Services oversees Part C services through the Birth to Three System, which contracts with local agencies to serve children who qualify. Local school districts are responsible for Part B services as part of their preschool special education programs. Child Development Infoline (CDI) at United Way of Connecticut performs the federally required *child find* function for Part C and Part B through screening to determine eligibility according to state-defined criteria. Children who do not qualify for IDEA services can benefit from other public and private supports, including those available through Head Start and home visiting programs.



Intervening before kindergarten saves society between \$30,000 and \$100,000 per child in academic and social service costs. In order to intervene early, however, we need to identify children at risk of delay.

Nationally, about 25% of children in EI services enter by seven months of age. These children tend to be those born prematurely or those with an automatically eligible diagnosis such as hearing loss, Down Syndrome and cleft palate. In Connecticut, early entry into EI services for automatically eligible diagnoses happens for about 11% of children in the Birth to Three System¹⁸. The great majority of children who enter EI services after seven months of age, however, tend to be those who have delays, not diagnosed disabilities.¹⁹

Enrollment of children in EI varies by state. In Connecticut, 467 children (1.25% of all children younger than one) born in 2011 entered EI services before their first birthday. Across all ages birth to three, 4,431 children (3.87% of all children younger than three in Connecticut) received EI services.²⁰ Other states' enrollment ranges from 1.28% of children younger than three in Alabama to 7.09% of children birth to three years old in Hawaii.¹³ The range in enrollment across states is due to several factors including eligibility criteria, whether the state serves at-risk children and public knowledge across the state about the program. Only six states exercise the option of providing EI services for children deemed at risk. Connecticut is not among these six.

For children whose developmental status is not compromised enough to qualify for EI services and preschool special education, Connecticut has other support options. Since 1965, Head Start and Early Head Start have been providing comprehensive early childhood and preschool programs to improve cognitive and socio-emotional skill development in low-income populations. In addition to Head Start, children can be connected to community-based development programs through Help Me Grow, a single point of entry to community-based services for children not eligible for EI and other services with restrictive eligibility criteria. Such development services, including Head Start, have been shown to be effective in preventing grade retention in school and placement in special education in elementary school for low-income children.^{21,22} Intervening before kindergarten saves society between \$30,000 and \$100,000 per child in academic and social service costs.^{1,23} In order to intervene early, however, we need to identify children at risk of delay.



Because screening is intended to detect children in need of further assessment, it should be universal, or administered to all children and not only to children at risk of delay.

DEVELOPMENTAL SCREENING FOR ALL CHILDREN

Developmental screening, including screening for socio-emotional and behavioral problems, is a powerful strategy for ensuring the early detection of children with, and at risk for, problems and delays. Without formal screening, catching delays before school entry is unlikely, evidenced by the fact that only about 30% of children's delays are detected before kindergarten.^{24,25}

Unlike developmental surveillance and monitoring, which do not rely on standardized and validated tools, screening is a brief process using formal tools as the first step to identify children at risk or with problems that require more intensive assessment.^{26,27} Because screening is intended to detect children in need of further assessment, it should be universal, or administered to all children and not only to children at risk of delay. Children who score within a certain range should be referred for assessment, which is more in-depth and comprehensive, examining needs, problems, strengths and resources. Screening can also contribute to developmental surveillance by creating a longitudinal record of a child's progress. Monitoring of developmental progress provides opportunities to intervene with developmental promotion activities when children begin falling off the healthy trajectory, regardless of their eligibility for EI services.

Screening Tools

There are several general and specific developmental and socio-emotional screening tools that have acceptable reliability (will produce the same results with repeated administration) and validity (measure what they intend to measure). Table 1 provides a snapshot of psychometrically robust tools that are currently used with young children in a variety of settings including health services, early care and education and home visiting programs. General tools address all developmental domains (gross and fine motor, adaptive and cognitive, speech and language and socio-emotional) to provide an overall look at children's strengths and areas of concern. Specific tools screen for single conditions or in only one domain. The screening tools listed in Table 1 achieve moderate specificity and sensitivity. They will identify about 80% of young children with delays and with 80% accuracy will determine children who do not have delays.^{28,29}

A tool that combines developmental, socio-emotional and general wellbeing is under development at Tufts Medical School.³⁰ Developmental specialists have designed the Survey of Wellbeing of Young Children (SWYC) to cover the entire spectrum of development (cognitive, socio-emotional, motor and risk assessment) in one parent-completed, short and easy to interpret tool for children ages birth to five. Federal funding is currently supporting the validation of the SWYC, which, if validated with several populations of children, could contribute greatly to the feasibility of uniform developmental screening across a variety of settings.

Table 1: Developmental and Socio-emotional Screening Tools Used and Reported in Connecticut

Tool	Ages	Measures
Ages and Stages Questionnaire (ASQ) ³⁵	3 months to 5 years	communication, fine motor, gross motor, problem solving and personal social
Ages and Stages Questionnaire: Socio-Emotional (ASQ-SE) ³⁶	3 months to 5.5 years	self-regulation, compliance, communication, adaptive, autonomy, affect and interaction with people
Battelle Developmental Inventory ³⁷	birth to 7 years, 11 months	personal-social, adaptive, motor, communication, and cognitive ability
Brief Infant Toddler Socio-Emotional Assessment (BITSEA) ³⁸	12 to 35 months	emerging socio-emotional problems
Brigance Early Childhood Screens III ³⁹	birth to 6 years	physical development, language, academic/ cognitive, self-help, and social-emotional skills
Denver Developmental Screening Test II ⁴⁰	birth to 6 years	fine motor, gross motor, language, personal-social
Devereux Early Childhood Assessment (DECA) ⁴¹	2 to 5 years	resiliency, socio-emotional development
Devereux Early Childhood Assessment – Infant Toddler (DECA-IT) ⁴²	0 to 2 years	resiliency
Early Screening Inventory (ESI) ⁴³	3 to 12 years	visual motor/adaptive, language and cognition, gross motor skills
Modified Checklist for Autism in Children (M-CHAT) ⁴⁴	16 and 30 months	autism
Parental Evaluation of Developmental Status (PEDS) ⁴⁵	birth to 8 years	global/cognitive, expressive language/ articulation, receptive language, fine motor, gross motor, behavior, social-emotional, self-help, school
Pediatric Symptom Checklist (PSC) ⁴⁶	4 years and up	mental health
Preschool and Kindergarten Behavior Scales-2 (PKBS-2) ⁴⁸	3 to 6 years	social skills and problem behaviors
Temperament and Atypical Behavior Scale (TABS) Screener ⁴⁷	11 to 71 months	temperament, attention, attachment, social behavior, play, vocal and oral behavior, senses and movement, self-stimulation and self-injury, and neurobehavioral state

	Administration	Sites
	parents complete (but professionals can help as some age screens require manipulatives), clinicians score	primary care, home visiting, Head Start and Medicaid Case Management
	parent completes, clinicians score	primary care, home visiting, Head Start
	tester administers	early care and education, home visiting, Head Start
	parent form and child care provider form	pediatric primary care, child care, home visiting
	teacher observations, parent ratings	Head Start, preschool
	clinician	early care and education, primary care
	parents, family caregivers or early childhood professionals	early care and education, Head Start and Early Head Start
	parents, family caregivers or early childhood professionals	early care and education, Early Head Start
	educational tester	early care and education, Head Start
	parent completes, clinician scores	pediatric primary care, early care and education
	parent completes, clinician scores	pediatric primary care
	parent completes, clinician scores	pediatric primary care
	can be completed by parents, teachers, other caregivers	home visiting, early care and education
	parent completes, clinician scores	early intervention, early care and education

Although it is preferable to use general developmental screening in early childhood populations, the one exception is the Modified Checklist for Autism in Children (M-CHAT), which the American Academy of Pediatrics (AAP) recommends for administration to 18 and 24 month old children as a screen for Autism Spectrum Disorders (ASD).³¹ This recommendation stems from the increasing rate of ASD (1 per 88 children)¹² and the effectiveness of interventions that begin at a young age.³² The Centers for Disease Control have undertaken a large federal initiative (Learn the Signs. Act Early) to increase ASD screening.³³ Another specific area of concern is language delay, which is highly prevalent in young children.⁹ However, the US Preventive Services Task Force, an independent panel of experts in prevention and evidence-based medicine in primary care, has deemed that there is insufficient evidence for universal speech and language screening.³⁴

All of the tools included in Table 1 are recommended by the major child health and development organizations, including the AAP and the National Early Childhood Technical Assistance Center at the University of North Carolina. These tools all have acceptable psychometric properties, having been shown to adequately identify children who need further assessment. Some are available free of charge (M-CHAT, PSC). Costs for other tools vary from a one-time purchase fee (e.g., \$275 for

an ASQ kit with unlimited use) to a cost per administration (e.g., \$3.50 per administration of the Brigance). Full information about the tools, including costs, time for completion, and psychometric properties, is available through the web references included in the reference for each tool and from the National Early Childhood Technical Assistance Center.⁴⁹

Parent Engagement in Screening

The fourth column in Table 1 distinguishes tools that require children to perform tasks for testers from those that are completed by parents/caregivers. The most widely used developmental screening tools are the latter. Parent completed tools recognize the wealth of information and experience that parents bring to the screening process. Research has shown that parents are quite accurate in identifying delays in children and that parent completed tools have equal or better psychometric properties than most direct observation measures.^{26,50,51,52} Engaging parents in the developmental screening process has many benefits. It allows for a more reflective assessment that considers the child's abilities over time rather than a single snapshot of abilities. Parents also are knowledgeable about the range of strengths that children have, which can inform the screening process beyond responses to specific items listed on tools. Most important, parent engagement will be integral in the successful implementation of developmental services, so upfront parental input is essential.^{53,54}

Engaging parents in the developmental screening process has many benefits. It allows for a more reflective assessment that considers the child's abilities over time rather than a single snapshot of abilities.

In order for parents to participate in their children's developmental screening, tools must be culturally and linguistically appropriate. Several of the tools listed in Table 1 are available in many languages (ASQ, M-CHAT, PEDS, PSC). They also report on the groups of children across which they have been tested. This enables matching of tools to the specific populations for which they will be used.

Concern About Over-referral for Assessment

One concern about universal screening is that too many children who do not have developmental delays will be referred for more extensive evaluations. A significant study, however, has shown that young children who show concerns from screening and then do not reach thresholds for intervention after more extensive assessments score lower on second level assessments than do children who passed screening. These children tend to eventually show lags in adaptive behavior, intelligence and academic achievement⁵⁵ and can benefit greatly from services if begun at an early age. Programs such as Head Start and resources offered through Help Me Grow in Connecticut can improve language, cognitive and academic skills, thereby reducing the disadvantage that these children bring to kindergarten and potentially carry throughout their school experience.

SCREENING SITES

Screening can occur in many sites that serve young children, thereby increasing opportunities to detect risk and delay. The three most common are child health services, early care and education and home visiting. In Connecticut, formal screening for developmental and socio-emotional delay occurs in each of these venues. This section discusses screening opportunities in pediatric primary care, Head Start, among home visiting programs, and through the Child Development Infoline at CT United Way.

Pediatric Primary Care

The pediatric primary care practice setting provides many opportunities to screen young children for developmental delays and risk. Just about all children use pediatric primary care services in their early years, in part because early care and education programs require evidence of completed immunizations and other well-child services for enrollment. The AAP recommends 14 well-child visits over the first five years of life. These visits allow pediatric providers to form frequent and long-term relationships with families through which they can monitor development and engage parents in screening and developmental promotion.

The current recommendations from the AAP²⁸ are articulated in the guideline released in 2006: *Identifying infants and young children with developmental disorders in the medical home: an algorithm for developmental surveillance and screening*. The algorithm calls for developmental surveillance at all well-child visits and developmental screening with

Despite the support and evidence for screening, reports of the extent of screening in pediatric primary care show great variation among various studies and among states.

a standardized tool at the 9, 18 and 24 or 30-month visits. Developmental surveillance includes eliciting parental concerns, documenting and maintaining a longitudinal developmental history, observing the child, identifying protective and risk factors, and obtaining input from others who interact with the child (e.g., child care providers). Formal screening includes the administration of standardized tools such as those described in Table 1.

Since the publication of the AAP guidelines, programs and policies have emerged to support the practice of developmental screening in pediatric primary care. At least 16 states,⁵⁶ including Connecticut, currently reimburse providers for screening with a formal screening tool on the same day as a well-child exam. This payment policy gives pediatric providers an incentive to screen with formal tools and integrates screening into periodic well-child exams. Families also benefit when screening is completed at the same time as their child's health examination because they do not need to schedule additional visits.

The National Committee on Quality Assurance (NCQA) also provides an incentive for providers to use formal screening tools according to the AAP guidelines. NCQA has included developmental screening as one of its 2011 standards for medical home recognition. These standards outline the necessary activities and processes for medical practices that wish to obtain official medical home status, which in Connecticut can mean enhanced reimbursement from Medicaid. Developmental screening at 9, 18 and 30-month well-child visits is

also included in the federal Early Periodic Screening Diagnosis and Treatment (EPSDT) guidelines that define health benefits under many insurance plans.

A study from a pediatric practice in Oregon highlighted the benefit of using formal screening tools in addition to ongoing developmental surveillance.⁵⁷ When the Ages and Stages Questionnaire was completed at 12-month well-child visits, the rate of referral to EI services increased more than two-fold from the baseline referral rate for the practice. In addition, screening identified more than twice as many children in need of evaluations than did pediatricians' clinical impressions.

Despite the support and evidence for screening, reports of the extent of screening in pediatric primary care show great variation among various studies and among states. Using 2,068 parental interviews from the 2000 National Survey of Early Childhood Health, an analysis found that 57% of parents reported some type of developmental assessment. This study asked parents if they were told that a developmental assessment was being done or if their child was asked to perform tasks as part of the visit. It is unclear whether formal developmental screening tools were used. Children in families of Hispanic origin, of lower socio-economic status and who received health services in a community health center were less likely to report a developmental assessment.⁵⁸

Results of a self-report survey of a national sample of pediatricians⁵⁹ published in 2003 found that about half stated that they used a formal developmental

In Connecticut, there has been an enormous increase in the number of children who receive developmental screening as part of pediatric well-child visits over the past five years.

screening tool during routine well-child visits. The percentage increased to 57% in a 2009 survey of AAP members.⁶⁰

State-specific screening rates vary widely. A study from Delaware and Maryland found a high rate of screening for developmental delay with the Denver II (50% of respondents) and a low rate of screening for Autism Spectrum Disorders (8%).⁶¹ In an analysis of the 2007 National Survey of Children's Health, states varied in the rate of standardized parent-completed developmental screening for children between 10 and 71 months from a low of 10.7% in Pennsylvania to a high of 47% in North Carolina.⁶² The national rate was 19.5%. Connecticut's rate was on the lower end at 16.6%. Since that time, some states, including Connecticut, have seen a rise in their rates of developmental screening. In North Carolina, as a result of the national Assuring Better Child Health and Development (ABCD) initiative, sponsored by the Commonwealth Fund and implemented by the National Association of State Health Policy, screening rates increased to more than 70% of well-child visits by 2011.⁶³ Other states that participated in the ABCD screening initiative also experienced policy improvements that supported screening in their states. Policies included: improvements in Medicaid benefits and coverage for young children, which improved utilization of well-child visits when screening could be performed; reimbursement for screening and related services; and implementation of quality improvement activities related to assessing the delivery of screening services to young children.⁵⁶

Developmental Screening in Pediatric Primary Care in Connecticut

In Connecticut, there has been an enormous increase in the number of children who receive developmental screening as part of pediatric well-child visits over the past five years. (Figure 2 depicts the growth in screening for children insured by Medicaid in Connecticut from 2007 through 2012.)⁶⁴ The increase is the result of several activities designed to assist pediatric providers in implementing developmental screening as part of well-child visits according to the AAP guidelines. In 2008, the Department of Social Services (DSS) approved payment for developmental screening on the same day as a well-child exam.⁶⁵ The payment policy provided incentives to practices to implement screening. The Connecticut Chapter of the American Academy of Pediatrics has held webinars for its members, and CHDI has visited more than 100 primary care practices with training on developmental and behavioral health screening as part of its Educating Practices in the Community (EPIC) program, which has been shown to be effective in improving implementation of screening in child health sites.⁶⁶

Although the data presented in Figure 2 show an optimistic picture of screening occurring in pediatric primary care, they are based on Medicaid claims and do not provide the complete picture. Primarily, it is difficult to assign a denominator for a full year as Medicaid eligibility varies throughout the year with some children only being covered part of the time. Without a denominator, the extent to which the increased enrollment in Medicaid accounts for

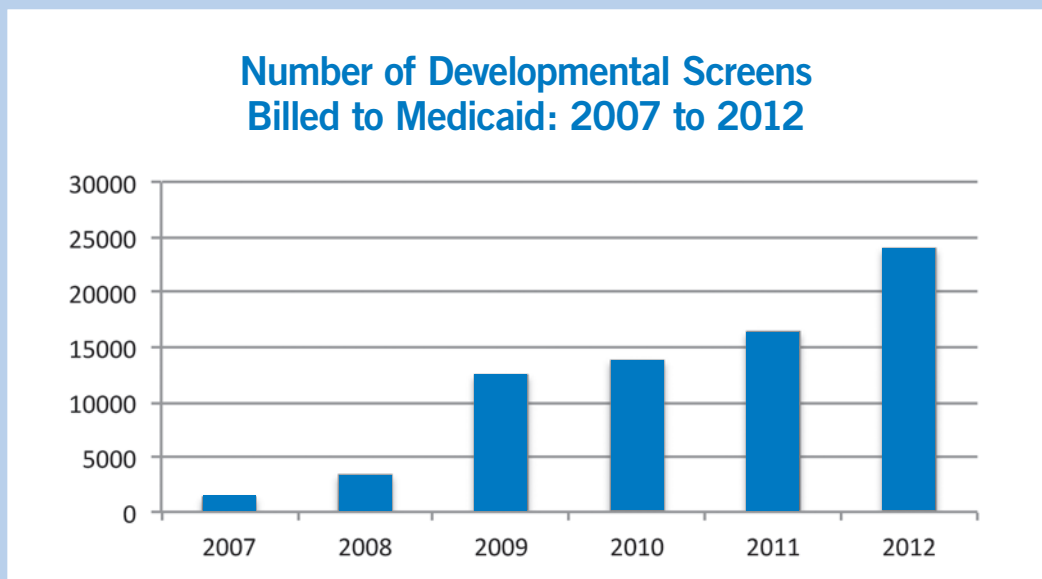
the increases in screening is unclear. In addition to the lack of a denominator, the data presented in Figure 2 also do not include children who receive services in sites that have bundled billing for well-child services and therefore do not bill separately for developmental screening. Such sites include Federally Qualified Health Centers and hospital primary care centers, two settings that serve primarily Medicaid recipients.

The Medicaid data also do not describe the screening that happens for children with commercial insurance. Although just about all commercial insurers pay for developmental screening on the same day as a well-child visit, they

do not report their claims experience. One large insurer in Connecticut provided data to CHDI showing that in 2012, 32% (6,547 children) of children ages birth to three covered in their plans had a developmental screen.

The biggest shortcoming from claims data is that they do not describe the tools used and the outcomes or follow-up of screening. They also do not distinguish between developmental and socio-emotional and behavioral screening, as both are billed with the same billing code. Chart audit data combining screening information for children insured by Medicaid or commercial carriers in a large primary care network in Connecticut suggest

Figure 2: Developmental Screening for Children Insured by Medicaid



As child health visits become less frequent after age three, it is important that developmental screening be integrated with other services that children use and that other sectors monitor children's development and risk status.

that screening for Autism at 18 and 24 months, not general developmental or socio-emotional screening, accounts for a good portion of the screening billed for children age three and younger in Connecticut.⁶⁶

Barriers to screening cited by pediatric providers include: time, reimbursement to cover purchase of tools, screening and scoring^{59,67} and lack of information about screening tools.⁶⁸ Despite these challenges, pediatric primary care is an opportune setting to screen very young children for developmental and behavioral delays and risks. However, beginning at age two, children only receive annual pediatric visits unless practices implement a 30-month option as is included in EPSDT guidelines.¹³ Therefore it is important that screening occur in other sites where young children receive services. As child health visits become less frequent after age three, it is important that developmental screening be integrated with other services that children use and that other sectors monitor children's development and risk status.

Child health sites also need to continue surveillance beyond the 30-month well-child visit as they may be the only place where children at increased risk of delay receive services. They can connect children at risk for poor developmental outcomes as a result of poverty, abuse, neglect and lack of nurturing relationships to early care and education and other early childhood programs when surveillance suggests that children may not be ready for kindergarten.

Screening Cannot be a Single Event

Brian's pediatrician expressed a concern about Brian's development at six months, but a subsequent referral to the Birth to Three System did not confirm the suspicion. Nor were any concerns borne out at the twelve month examination. However, at sixteen months when the pediatrician administered the Ages and Stages Questionnaire, he picked up firmer evidence of a developmental delay. Brian was once again referred to Birth to Three where some evidence of autism was discovered, and he then qualified for services. Because his condition was identified at an early stage, Brian's parents are hopeful that the condition will be more easily managed, resulting in better developmental outcomes.

Head Start

Although several early care and education sites may screen children in their care for developmental delays and risks, Head Start is the only program that is mandated to perform screening. Head Start is a federally funded program that provides early education, family support, health, dental, nutrition and social services to low-income children ages three and four and their families. The goal of the program is to promote school readiness for the nation's most vulnerable children, those living in poverty. Nationwide, Head Start has served more than 30 million children since its inception.

With such an emphasis on early development and service to low-income populations, it is not surprising that Head Start regulations require programs to perform developmental screening on all enrolled children.

In 1994, the federal Department of Health and Human Services extended Head Start to include community-based services for pregnant women, infants and toddlers under Early Head Start. The focus of both programs is guided by the importance of healthy early development to positive school and life outcomes.⁶⁹ Head Start receives about 5% of its funds for preschool services through the Head Start State Supplement. Early Head Start does not receive a state subsidy.

With such an emphasis on early development and service to low-income populations, it is not surprising that Head Start regulations require programs to perform developmental screening on all enrolled children. Section 1304.20 of the Head Start performance standards (Screening for developmental, sensory, and behavioral concerns) states:

In collaboration with each child's parent, and within 45 calendar days of the child's entry into the program, grantee and delegate agencies must perform or obtain linguistically and age appropriate screening procedures to identify concerns regarding a child's developmental, sensory (visual and auditory), behavioral, motor, language, social, cognitive, perceptual, and emotional skills.... To the greatest extent possible, these screening procedures must be sensitive to the child's cultural background.⁷⁰

Head Start not only mandates screening for all enrolled children but also requires that programs report rates of screening as well as outcomes from screening of newly enrolled children annually to the Administration for Children and Families. Data for Connecticut from the Office of Head Start's Program Information Reports for 2011 to 2012 (summarized in Table 2) show impressive rates of screening across Head Start programs.

Table 2: Developmental Screening in Connecticut's Head Start Programs 2011 to 2012 Annual Numbers⁷¹

Program	Number of New Enrollees	Percent Screened	Percent Screened Needing Follow-up Assessment	Screening Tools Used (number of sites)
Early Head Start	545	96%	14%	ASQ (15) Brigance (1) ASQ-SE (2)* DECA (1)*
Head Start	5,062	96%	10%	ASQ (8) ESI (9) Brigance (4) Batelle (2) DECA (2)* TABS (1)* Other (4)

Home visiting programs have embraced developmental screening as a way to identify children who need further assessment and/or intervention services as well as to monitor developmental progress for children they serve.

Requirements for ongoing developmental monitoring are also included in the Head Start performance standards. Part (d) of Section 1304.20 states that Head Start grantees:

...must implement ongoing procedures by which Early Head Start and Head Start staff can identify any new or recurring medical, dental, or developmental concerns so that they may quickly make appropriate referrals. These procedures must include: periodic observations and recordings, as appropriate, of individual children's developmental progress, changes in physical appearance (e.g., signs of injury or illness) and emotional and behavioral patterns. In addition, these procedures must include observations from parents and staff.⁷⁰

This performance standard is further defined in the Head Start Child Development and Early Learning Framework,⁷² which provides specific information on the 11 domains that need to be monitored and examples of skills under each domain for children ages three to five. The Framework is intended not only to serve as a developmental monitoring guide for individual children but also as a tool for promoting developmental progress in classroom activities. The Framework requires Head Start programs to select "assessment instruments that are reliable and valid; developmentally, linguistically, and culturally appropriate for the population served."⁷² With these performance standards in place, Head Start programs provide valuable opportunities for early detection of enrolled children's development challenges.

Home Visiting

Home visiting also provides developmental screening of young children. In Connecticut, these initiatives are funded by a mix of federal dollars from the Maternal, Infant, and Early Childhood Home Visiting program and by state dollars. Research on home visiting definitely shows the impact that working with mothers of young children in the home setting can have on child development. In a randomized controlled study, children whose families received support services from a nurse in their homes showed higher intellectual functioning, larger vocabularies and fewer mental health problems at six years of age.⁷³ Paraprofessional home visiting programs have also shown benefits for child development outcomes as measured with standardized scales at age two.⁷⁴ Home visiting programs have embraced developmental screening as a way to identify children who need further assessment and/or intervention services as well as to monitor developmental progress for children they serve.

Connecticut has three major home visiting programs for low-income families with young children: Child First, Early Head Start and the Nurturing Families Network (NFN). Although each serves different populations, they all use standardized tools to identify children in need of assessment and intervention services and connect these children to such services. Early Head Start has been discussed above, and the following sections review screening in the other two home visiting programs.

Child First is an evidence-based, in-home, early childhood intervention program that works to decrease the incidence of serious emotional disturbance, developmental and learning problems, and abuse and neglect among the most vulnerable young children and families. The Child First model includes comprehensive screening for young children ages birth through five years – at baseline, six months, and discharge – for developmental delays, mental health issues, parental risk factors, and trauma. Child First uses a variety of screening tools based on the child’s age including the ASQ, ASQ-SE, BITSEA, and PKBS-2. The program also uses several psychosocial screening instruments, including the Traumatic Events Screening Inventory (TESI),⁷⁵ Parenting Stress Index (PSI),⁷⁶ Center for Epidemiology Scale-Depression (CES-D),⁷⁷ Life Stress Checklist (LSC),⁷⁸ and the Caregiver PTSD Symptom Scale Interview (PSS-I).⁷⁹

Fifteen agencies in Connecticut are currently using the Child First model, which represents at least one agency in each Department of Children and Families (DCF) region of the state. Since 2010, Child First programs have screened more than 800 infants and young children. In 2012, 50% of children screened with the ASQ showed some level of risk for developmental delay (1 or more areas <1.5 SD below the mean) and 50% of children screened with the BITSEA or PKBS showed mental health concerns at entry to the program. When these screens were repeated at discharge, the change among those children with mental health and language problems at baseline showed strong statistically significant improvement.⁸⁰ Psychosocial screening in Child First programs revealed that 83% of children had exposure to at least one traumatic event, 52% of parents reported high levels of stress and 39% scored high for depressive symptoms.

Parents as Teachers

Parents as Teachers (PAT) is a national organization dedicated to providing parents with “information, support and encouragement.....they need to help their children develop optimally during the crucial early years of life.”⁸² Home visiting agencies in all 50 states and in seven other countries use the PAT curriculum, which includes developmental screening with the ASQ. In 2014, all programs using the PAT curriculum will be required to use the ASQ-SE to screen for mental health risks. NFN in Connecticut is a good example of a home visiting program that uses the PAT curriculum. Home visitors complete the ASQ with families during visits and use the screening as a way to discuss development with parents. When children show concerns from screening, home visitors encourage parents to share results with their child’s health provider and make referrals directly to assessment programs. In 2012, home visitors using the PAT model in Connecticut completed developmental screening with 2,635 children (which includes the children from NFN), accounting for 73% of children served by PAT programs. Eleven percent (283) of those screened showed a delay or concern, and 81% of the children referred for further assessment or follow-up received those services.⁸³

Home visiting programs in Connecticut make great contributions to the early detection of children with, or at risk for developmental delay. Beginning in 2014, screening for socio-emotional concerns will also be emphasized in these programs.

The Nurturing Families Network (NFN) is a program of the Children's Trust Fund within the Office of Early Childhood. It provides support for first time, at-risk parents on how to nurture their children with a goal of reducing abuse and neglect. NFN serves families through home visits as well as through family support groups. Home visitors in the NFN program use the ASQ to screen children's development at 2, 4, 6, 12, 24, 30, 33 and 36 months of age. In 2012, home visitors completed a total of 4,303 screens for 1,415 children. Six percent of children showed a developmental delay, and after discussion with parents, the home visitor connected them to assessment and/or intervention services through the United Way 211 Child Development Infoline (CDI) or directly to local resources.⁸¹

Community Health Network (CHN), Connecticut's Medicaid Administrative Services Organization since January of 2012, does not have a formal home visiting program, but does visit families insured by Medicaid who need case management. CHN staff complete the ASQ when children five and younger are referred for case management for medical reasons. Over the first six months of 2013, CHN staff completed ASQs for 23 children and referred four (17%) of them for further evaluation.⁸⁴

Home visiting programs in Connecticut make great contributions to the early detection of children with, or at risk for developmental delay. Beginning in 2014, screening for socio-emotional concerns will also be emphasized in these programs.

United Way 211 Child Development Infoline (CDI)

In addition to pediatric primary care, Head Start and home visiting, Connecticut also has a unique system that encompasses screening as well as connecting children identified through screening to further assessment and intervention services. United Way's 211 Child Development Infoline (CDI) is a central telephone access point for developmental services for young children throughout the state.⁸⁵ CDI maintains an extensive database of assessment and evaluation services and intervention programs that serve young children. A staff of care coordinators respond to referrals from parents and other relatives, child care workers, preschool teachers and child health providers. They connect children to assessment, intervention and community-based support services.

CDI is the single point of access to EI services in Connecticut. Children who are eligible for EI in Connecticut have: 1) a diagnosed medical condition with a high likelihood of resulting in developmental delay; 2) tested two standard deviations below average in at least one area of development; 3) tested 1.5 standard deviations below average in two or more areas of development; or 4) could not be tested, but had significant developmental delay according to clinical opinion. In 2012, 40% of the 8,419 children referred to EI, did not qualify for services.¹⁸ When children do not qualify for EI services, CDI links them to community-based developmental resources through Help Me Grow, a

program of the Children's Trust Fund that is being replicated in 15 states. Help Me Grow is an ideal system for children at risk of delay, but not delayed enough to qualify for EI and preschool special education services.

CDI also offers families of children who do not qualify for EI free participation in the mail-in version of the ASQ. Parents receive the age-appropriate ASQ form in the mail and send completed forms back to CDI, where staff score them. If scoring shows concerns, CDI care coordinators contact parents to link them to further evaluation or intervention services. In 2012, 1,121 families participated in the ASQ by mail program. The ASQ by mail program is offered to families when children are evaluated but do not qualify for EI and to families whose children are referred by their healthcare or other service provider with concerns. CDI is testing application of the online ASQ in one community to determine the feasibility of using it statewide.⁸⁶

Engaging Parents in the ASQ

A family whose child was born six weeks prematurely and had some feeding concerns, was originally referred to Birth to Three but Nina was found ineligible for those services. Upon learning that the child was not eligible for Birth to Three, the CDI Care Coordinator explained to the parents that the ASQ system was a way for them to track and support their daughter's development. The parents enrolled their daughter in this free service. The family received and completed age appropriate questionnaires about Nina's development in the areas of communication, personal/social, motor skills and problem solving. Although Nina did not qualify for Birth to Three, the family was engaged in ongoing developmental screening, and results are shared with their pediatrician.



The lack of coordinated screening across programs limits the extent to which the state can track screening and document outcomes and interventions provided to children.

CONCLUSIONS

Clearly there is a commitment on the part of several Connecticut programs, agencies and services to the early identification of children with, or at risk for, developmental and socio-emotional delays. Screening in pediatric primary care, home visiting, Head Start and other service sectors is ongoing and structured to ensure connection of children to further assessment and intervention services. The lack of coordinated screening across programs, however, limits the extent to which the state can track screening and document outcomes and interventions provided to children. In addition, much is known about screening in settings with public funding (e.g. Medicaid, Head Start, Home Visiting) but very little about children receiving screening and services in the private sector. Almost half of the children receiving EI services in 2012 in Connecticut had commercial insurance, highlighting the need to ensure that all children, not just those in low-income families, receive developmental screening. With this recognition, current screening efforts provide an excellent foundation for building a statewide system of early detection and intervention for all young children. Connecticut's early childhood providers have demonstrated that developmental screening is feasible in several settings. The opportunities for meeting the needs of children who show concerns from screening, including further assessment and intervention, are also in place in Connecticut.

The challenges remaining are to ensure that:

- 1) **screening is universal** and that all children receive developmental and mental health screening before age three and then throughout their preschool years.
- 2) **screening is coordinated** across settings so that the same tools are not administered to children multiple times in different settings.
- 3) **the outcomes of screening are documented** for all children and shared across settings (medical, EI, home visiting, early care and education and home).
- 4) **all children who show concerns from screening are connected to further assessment services** and interventions with results documented and shared.

Emerging opportunities in Connecticut can accelerate attainment of the above. The new Office of Early Childhood (OEC) includes, and will create opportunities for integration among, many of the programs that provide screening and interventions. The recently awarded Early Childhood Comprehensive Systems grant from the federal Maternal and Child Health Bureau provides an opportunity to employ a rigorous planning process for addressing developmental screening. The Department of Social Services' Person Centered Medical Home program encourages pediatric

primary care providers to become recognized as medical homes, which includes implementing developmental screening as well as coordinating care with community services. The Department of Children and Families is in the process of developing protocols for identifying developmental delays in children who are referred to child welfare services. This is mandated under recent legislation,⁸⁷ which also requires the agency to connect children to evaluation and intervention services.

In addition to developmental concerns, the socio-emotional and behavioral needs of young children also are a top priority in Connecticut. Public Act No. 13-178, *An Act Concerning The Mental, Emotional And Behavioral Health Of Youths*, calls for “prevention-focused techniques, with an emphasis on early identification and intervention.”⁸⁸ The legislation includes language for increased participation by Birth to Three in meeting socio-emotional and behavioral health needs of young children. It also requires the OEC to develop a set of recommendations for incorporating mental health into home visiting programs. Another policy opportunity for promoting mental health

screening has been adopted in Massachusetts, where legislation requires pediatric health providers to screen for mental health concerns with a standardized tool at all well-child visits.⁸⁹ Rates of screening across all age groups increased from 16.6% of all Medicaid well-child visits in the first quarter of 2008, before the mandate to screen was enacted, to 53.6% in the first quarter of 2009. Additionally, the number of children referred from pediatric primary care for further assessment increased substantially from 1,600 in the first quarter of 2008 to nearly 5,000 in Quarter 1 of 2009.⁹⁰ We can expect mental health screening of young children and early identification of those in need of further evaluation to increase in Connecticut as PAT, and its implementation in NFN and other home visiting programs, implements universal application of the ASQ-SE.

RECOMMENDATIONS

The following recommendations provide specific actions that can help Connecticut build a robust system of early identification of children with developmental and mental health needs. They outline the steps toward creating such a system in the context of available assessment and intervention services.

The underlying principle in these recommendations is that all children should be screened within an integrated system that ensures that: 1) their results are available across the services they use, 2) they are connected to services they need, and 3) all involved providers are engaged in developmental promotion in partnership with families.

1. The Office of Early Childhood (OEC) serves as the lead agency for ensuring the early identification of children with developmental and socio-emotional risks, as well as their connection to assessment and intervention services.

2. OEC convenes a group of stakeholders that is representative of the providers who screen, state agencies with screening programs, and parents of young children. The group would be charged with developing a screening protocol for young children in Connecticut that includes developmental, socio-emotional and psychosocial screening. Appropriate use of tools, referral mechanisms and documentation and sharing of results should be addressed for each area of screening, with a goal toward creating a statewide system of early detection and connection of children to intervention services. This work could be accomplished under the Early Childhood Comprehensive Systems grant.

3. OEC explores models of efficiently providing assessments for children who show concerns from screening. Learning from the experience in Massachusetts, as screening becomes universal, there likely will be an increased need for next level assessment. CHDI has demonstrated the feasibility and efficiency, both in terms of time and cost, of Mid-Level Developmental Assessment (MLDA).⁹¹

4. Expand the role of Child Development Infoline as the central point of access for connection to assessment and intervention services to ensure that all children in need of further services receive them and that connections are documented.

5. OEC includes in the early childhood data system under development, child-level data on screening, screening results and services provided across primary care, home visiting, Head Start and other programs that screen and assess children. Data would be used to provide an annual snapshot of the developmental status of children in Connecticut as well as to identify gaps in screening and available services. With parental consent, providers in all sectors would have access to screening, assessment and service participation information on the children they serve. The role of the Early Childhood Health Assessment Records⁹² in transporting health, screening and developmental information across settings should be explored. These forms are required for enrollment in early care and education. Child health providers are required to complete these forms, including a section on developmental screening. CHDI's preliminary work has found that this information is often missing from forms (60% of the 2,259 forms reviewed).⁹³

The underlying principle in these recommendations is that all children should be screened within an integrated system that ensures that: 1) their results are available across the services they use, 2) they are connected to services they need, and 3) all involved providers are engaged in developmental promotion in partnership with families. Connecticut has many of the pieces in place to ensure that this can happen, both in the activities that are underway as well as in new opportunities on the horizon.

REFERENCES

- ¹ Shonkoff JP, Philips DA, eds. From Neurons to Neighborhoods. Washington, DC: Institute of Medicine; 2000:384.
- ² Wertheimer R, Croan T, Moore KA, Hair EC. Attending kindergarten and already behind: a statistical portrait of vulnerable young children. Washington, DC: Child Trends; 2003.
- ³ Dworkin P, Honigfeld L, Meyers J. A framework for child health services: supporting the healthy development and school readiness of Connecticut's children. Child Health and Development Institute of Connecticut. 2009.
- ⁴ Brooks-Gunn J, Duncan GJ. The effects of poverty on children. Future of Children, Volume 7, Number 2, Summer/Fall 1997
- ⁵ Jaudes PK, Shapiro LD. Child abuse and developmental disabilities. In Silver J, Amster BJ, Haecker T (eds). Young children and foster care: a guide for professionals. Baltimore: Paul H. Brookes Publishing Co; 1999.
- ⁶ Center for the Developing Child. The foundations of lifelong health. Harvard University. http://developingchild.harvard.edu/index.php/resources/briefs/inbrief_series/inbrief_foundations_of_lifelong_health/
- ⁷ Heckman JJ. Skill formation and the economics of investing in disadvantaged children. Science. 2006; 312:1900-2.
- ⁸ Boyle CA, Boulet S, Schieve LA, Cohen RA, Blumberg SJ, Yeargin-Allsopp M, et al. Trends in the prevalence of developmental disabilities in US children, 1997-2008. Pediatrics. 2011; 127:1034-42.
- ⁹ Horwitz SM, Irwin JR, Briggs-Gowan MJ, Bosson Heenan JM, Mendoza J, Carter AS. Language delay in a community cohort of young children. Journal of the American Academy of Child and Adolescent Psychiatry. 2003; 42:932-40.
- ¹⁰ Brown RT, Freeman WS, Perrin JM, Stein MT, Amler RW, Feldman HM, et al. Prevalence and assessment of attention-deficit/hyperactivity disorder in primary care settings. Pediatrics. 2001; 107:E43.
- ¹¹ Dey AN, Bloom B. Summary Health Statistics for U.S.Children: National Health Interview Survey, 2003. Vital and Health Statistics, Series 10, March 2005 (223):1-78.
- ¹² US Department of Health and Human Services. Centers for Disease Control. Press Release. March 29, 2012. http://www.cdc.gov/media/releases/2012/p0329_autism_disorder.html. Accessed July 23, 2013.
- ¹³ Sices L. Developmental Screening in Primary Care: The Effectiveness of Current Practice and Recommendations for Improvement, The Commonwealth Fund, December 2007. Accessed July 23, 2013.
- ¹⁴ Qi CH, Kaiser AP. Behavior Problems in Preschool Children from Low-Income Families: Review of the Literature. Topics in Early Childhood Special Education. 2003;23(4):188-216.
- ¹⁵ Cooper, JL., Masi, R., Vick J. Social-emotional development in early childhood: What every policymaker should know. 2009. National Center for Children in Poverty, August 2009.
- ¹⁶ Glascoe FP, Leew S. Parenting behaviors, perceptions, and psychosocial risk: impacts on young children's development. Pediatrics. 2010; 125:313-9.
- ¹⁷ Most recent law is included in Parts 300 and 301 of Title 34 of the Code of Federal Regulations.
- ¹⁸ Connecticut Birth to Three System. Taking First Steps Together. 2012 Annual Report.
- ¹⁹ Bailey DB, Jr., Hebbeler K, Scarborough A, Spiker D, Mallik S. First experiences with early intervention: a national perspective. Pediatrics. 2004; 113:887-96.
- ²⁰ Connecticut Birth to Three data tables. Available at: <http://birth23.org/files/618/table1ab2011.pdf>. Accessed July 23, 2013.
- ²¹ Reynolds AJ, Temple JA, Robertson DL, Mann EA. Long-term effects of an early childhood intervention on educational achievement and juvenile arrest: A 15-year follow-up of low-income children in public schools. JAMA: the journal of the American Medical Association. 2001; 285:2339-46.

- 22 Anderson LM, Shinn C, Fullilove MT, Scrimshaw SC, Fielding JE, Normand J, et al. The effectiveness of early childhood development programs. A systematic review. *American journal of preventive medicine*. 2003; 24:32-46.
- 23 Pinto-Martin JA, Dunkle M, Earls M, Fliedner D, Landes C. Developmental stages of developmental screening: steps to implementation of a successful program. *American journal of public health*. 2005; 95:1928-32.
- 24 King TM, Glascoe FP. Developmental surveillance of infants and young children in pediatric primary care. *Current opinion in pediatrics*. 2003; 15:624-9.
- 25 King TM, Glascoe FP. Developmental surveillance of infants and young children in pediatric primary care. *Current opinion in pediatrics*. 2003; 15:624-9.
- 26 Rydz D, Shevell MI, Majnemer A, Oskoui M. Developmental screening. *Journal of child neurology*. 2005; 20:4-21.
- 27 Meisels SJ, Atkins-Burnett S. *Developmental Screening in Early Childhood: A Guide*. 5th Edition. National Association for the Education of Young Children. Washington, DC
- 28 American Academy of Pediatrics Council on Children with Disabilities, Section on Developmental Behavioral Pediatrics, Bright Futures Steering Committee, & Medical Home Initiatives for Children with Special Needs Project Committee. Identifying infants and young children with developmental disorders in the medical home: an algorithm for developmental surveillance and screening. *Pediatrics*. 2006;118(1):405-420.
- 29 Glascoe FP, Foster EM, Wolraich ML. An economic analysis of developmental detection methods. *Pediatrics*. 1997; 99:830-7.
- 30 <https://www.tuftsmedicalcenter.org/News-Events-Media/News/Working-Together/2013/Children-with-Special-Needs-researchers-get-important-funding.aspx>. Accessed September 22, 2013.
- 31 Johnson CP, Myers SM, American Academy of Pediatrics Council on Children With D. Identification and evaluation of children with autism spectrum disorders. *Pediatrics*. 2007; 120:1183-215.
- 32 <http://www.nationalautismcenter.org/pdf/NAC%20Standards%20Report.pdf>. Accessed August 15, 2013.
- 33 <http://www.cdc.gov/ncbddd/actearly/index.html>. Accessed on August 15, 2013.
- 34 Nelson HD, Nygren P, Walker M, Panoscha R. Screening for speech and language delay in preschool children: systematic evidence review for the US Preventive Services Task Force. *Pediatrics*. 2006; 117:e298-319.
- 35 <http://agesandstages.com/>. Accessed July 26, 2013.
- 36 <http://eip.uoregon.edu/research/asqse.html>. Accessed July 26, 2013.
- 37 <http://www.riverpub.com/products/bdi2/>. Accessed August 5, 2013.
- 38 <https://www.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8007-352>. Accessed July 26, 2013.
- 39 <http://www.curriculumassociates.com/products/detail.aspx?title=BrigEC-Screens3>. Accessed July 26, 2013.
- 40 <http://denverii.com/denverii/>. Accessed July 26, 2013.
- 41 <http://www.kaplanco.com/store/trans/productDetailForm.asp?CatID=17IEA1000I0&PID=41009>. Accessed July 26, 2013.
- 42 <http://www.kaplanco.com/store/trans/productDetailForm.asp?CatID=17IEA1000I0&PID=41009>. Accessed July 26, 2013.
- 43 <http://psychcorp.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=PAaESI>. Accessed July 26, 2013.
- 44 <https://www.m-chat.org/>. Accessed July 26, 2013.
- 45 <http://www.pedstest.com/default.aspx>. Accessed July 26, 2013.
- 46 http://www.massgeneral.org/psychiatry/services/psc_home.aspx. Accessed July 26, 2013.
- 47 <http://www.redleafpress.org/Temperament-and-Atypical-Behavior-Scale-TABS-Screener-P760.aspx>. Accessed July 26, 2013.

- 48 <http://www.proedinc.com/customer/productview.aspx?id=2285>. Accessed on August 16, 2013.
- 49 <http://www.nectac.org/~pdfs/pubs/screening.pdf>. Accessed on August 16, 2013.
- 50 Glascoe FP, Dworkin PH. The role of parents in the detection of developmental and behavioral problems. *Pediatrics*. 1995; 95:829-36.
- 51 Glascoe FP, Sandler H. Value of parents' estimates of children's developmental ages. *The Journal of pediatrics*. 1995; 127:831-5.
- 52 Ireton H, Glascoe FP. Assessing children's development using parents' reports. *The Child Development Inventory*. *Clinical pediatrics*. 1995; 34:248-55.
- 53 Bear LM. Early identification of infants at risk for developmental disabilities. *Pediatric clinics of North America*. 2004; 51:685-701.
- 54 Lipkin PH, Gwynn H. Improving developmental screening: combining parent and pediatrician opinions with standardized questionnaires. *Pediatrics*. 2007; 119:655-6; author reply 6-7.
- 55 Glascoe FP. Are overreferrals on developmental screening tests really a problem? *Archives of pediatrics & adolescent medicine*. 2001; 155:54-9.
- 56 Kaye N, May J.: *Findings from the ABCD Screening Academy State Policy Improvements that Support Effective Identification of Children At-Risk for Developmental Delay*. Portland: National Academy of State Health Policy. 2009.
- 57 Hix-Small H, Marks K, Squires J, Nickel R. Impact of implementing developmental screening at 12 and 24 months in a pediatric practice. *Pediatrics*. 2007; 120:381-9.
- 58 Halfon N, Regalado M, Sareen H, Inkelas M, Reuland CH, Glascoe FP, et al. Assessing development in the pediatric office. *Pediatrics*. 2004; 113:1926-33.
- 59 Sices L, Feudtner C, McLaughlin J, Drotar D, Williams M. How do primary care physicians identify young children with developmental delays? A national survey. *Journal of developmental and behavioral pediatrics : JDBP*. 2003; 24:409-17.
- 60 Radecki L, Sand-Loud N, O'Connor KG, Sharp S, Olson LM. Trends in the use of standardized tools for developmental screening in early childhood: 2002-2009. *Pediatrics*. 2011; 128:14-9.
- 61 Dosreis S, Weiner CL, Johnson L, Newschaffer CJ. Autism spectrum disorder screening and management practices among general pediatric providers. *Journal of developmental and behavioral pediatrics : JDBP*. 2006; 27:S88-94.
- 62 Earls MF, Hay SS. Setting the stage for success: implementation of developmental and behavioral screening and surveillance in primary care practice--the North Carolina Assuring Better Child Health and Development (ABCD) Project. *Pediatrics*. 2006; 118:e183-8.
- 63 Bethell C, Reuland C, Schor E, Abrahms M, Halfon N. Rates of parent-centered developmental screening: disparities and links to services access. *Pediatrics*. 2011; 128:146-55.
- 64 Data received from the Connecticut Department of Social Services.
- 65 State of Connecticut, Department of Social Services, Medical Care Administration. Policy Transmittal 2008-20. Issued October 2008.
- 66 Honigfeld L, Chandhok L, Spiegelman K. Engaging pediatricians in developmental screening: the effectiveness of academic detailing. *Journal of autism and developmental disorders*. 2012; 42:1175-82.
- 67 Honigfeld L, McKay K. Barriers to enhancing practice-based developmental services. *Journal of developmental and behavioral pediatrics : JDBP*. 2006; 27:S30-3; discussion S4-7, S50-2.
- 68 Golnik A, Ireland M, Borowsky IW. Medical homes for children with autism: a physician survey. *Pediatrics*. 2009; 123:966-71.
- 69 Office of Head Start. www.acf.hhs.gov/programs/ohs. Accessed July 24, 2013.

⁷⁰ Section 1304.20 Child health and developmental services of the Head Start performance standards. <http://eclkc.ohs.acf.hhs.gov/hslc/standards/Head%20Start%20Requirements/1304/1304.20%20Child%20health%20and%20developmental%20services..htm>. Accessed on July 24, 2013

⁷¹ 2012 Head Start Program Information Report. Data provided by Head Start staff.

⁷² http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/eeed/Assessment/Child%20Outcomes/HS_Revised_Child_Outcomes_Framework%28rev-Sept2011%29.pdf. Accessed on August 16, 2013.

⁷³ Olds DL, Kitzman H, Cole R, Robinson J, Sidora K, Luckey DW, et al. Effects of nurse home-visiting on maternal life course and child development: age 6 follow-up results of a randomized trial. *Pediatrics*. 2004; 114:1550-9.

⁷⁴ Caldera D, Burrell L, Rodriguez K, Crowne SS, Rohde C, Duggan A. Impact of a statewide home visiting program on parenting and on child health and development. *Child abuse & neglect*. 2007; 31:829-52.

⁷⁵ http://www.fordham.edu/images/academics/graduate_schools/gsss/catm%20-%20history%20of%20trauma%203.pdf. Accessed on August 16, 2013.

⁷⁶ <http://www4.parinc.com/Products/Product.aspx?ProductID=PSI-4>. Accessed on August 16, 2013.

⁷⁷ <http://cesd-r.com/>. Accessed on August 16, 2013.

⁷⁸ <http://www.ptsd.va.gov/professional/pages/assessments/lsc-r.asp>. Accessed on August 16, 2013.

⁷⁹ <http://www.istss.org/PosttraumaticSymptomScaleInterviewVersion.htm>

⁸⁰ Information about Child FIRST provided by program staff.

⁸¹ NFN information provided by program staff.

⁸² Vision retrieved from: <http://www.parentsasteachers.org/about/what-we-do/visionmission-history>. Accessed July 25, 2013.

⁸³ PAT information provided by program staff.

⁸⁴ CHN information provided by program staff.

⁸⁵ <http://www.ctunitedway.org/cdi.html>. Accessed July 25, 2013.

⁸⁶ CDI information provided by program staff.

⁸⁷ State of Connecticut Public Act No. 13-247, AN ACT IMPLEMENTING PROVISIONS OF THE STATE BUDGET FOR THE BIENNIUM ENDING JUNE 30, 2015 CONCERNING GENERAL GOVERNMENT.

⁸⁸ <http://www.cga.ct.gov/2013/ACT/PA/2013PA-00178-R00SB-00972-PA.htm>. Accessed July 26, 2013.

⁸⁹ <http://www.sciencedaily.com/releases/2011/03/110307161954.htm>. Accessed July 26, 2013.

⁹⁰ Kuhlthau K, Jellinek M, White G, Vancleave J, Simons J, Murphy M. Increases in behavioral health screening in pediatric care for Massachusetts Medicaid patients. *Archives of pediatrics & adolescent medicine*. 2011; 165:660-4.

⁹¹ Honigfeld, L., Chandhok, L., Fenick, A., Martini Carvell, K., Vater, S. and Ward-Zimmerman, B. Mid-Level Developmental and Behavioral Assessments: Between Screening and Evaluation. Farmington, CT: Child Health and Development Institute of Connecticut. 2012.

⁹² http://www.ct.gov/dph/lib/dph/daycare/CDC_ChildHlthAssessRcd.pdf. Accessed July 26, 2013.

⁹³ Information provided by CHDI staff.



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Child Health and
Development Institute
of Connecticut, Inc.

270 Farmington Avenue
Suite 367
Farmington, CT 06032

860.679.1519
chdi@adp.uchc.edu
www.chdi.org