

Child Development (Screening)

Clinical Preventive Service Recommendations

U.S. Preventive Services Task Force Recommendation

In 2006, the U.S. Preventive Services Task Force (USPSTF) found that evidence was “insufficient” to recommend for or against routine use of brief, formal screening instruments in primary care to detect speech and language delay in children up to 5 years of age.¹

Evidence Rating: I (Insufficient Evidence)

The USPSTF was unable to find studies that addressed the overarching question of whether screening for speech and language delay with brief, formal instruments improves long-term speech, language, and other non-speech-and-language outcomes. However, the USPSTF did find fair evidence to suggest that interventions can improve the results of short-term assessments of speech and language skills. The USPSTF could not find studies that addressed the potential harms of screening or interventions for speech and language delays. The USPSTF could not determine the balance of benefits and harms of screening with brief, formal screening instruments.¹

The USPSTF did not examine other aspects of developmental screening.

Other Recommended Guidance American Academy of Pediatrics (AAP)

The American Academy of Pediatrics (AAP) recommends regular, universal developmental screening of infants and young children by primary pediatric healthcare providers at 9, 18, and 30 months, using standardized screening tools with high specificity and sensitivity, to identify children in need of further assessment and diagnosis, and appropriate referral for early intervention and education services as indicated.²

Evidence Rating:

Not Specified

Other professional organization such as the National Association of Pediatric Nurse Practitioners (NAPNAP)³ and the American Academy of Neurology⁴ recommend screening for developmental disorders.

Information Sources

The recommendations and supporting information contained in this document came from several sources, including the:

- American Academy of Child and Adolescent Psychiatry
- American Academy of Neurology
- American Academy of Pediatrics (AAP)
- American Psychological Association (APA)
- Centers for Disease Control and Prevention (CDC)
- Committee on Educational Interventions for Children with Autism, National Research Council, National Academies of Science
- Maternal Child Health Bureau (MCHB)

- National Association of Pediatric Nurse Practitioners (NAPNAP)
- National Research Council, Committee on Educational Interventions for Children with Autism, Division of Behavioral and Social Sciences and Education
- Peer-reviewed research

The background and supporting information contained in this document is a compilation of research findings. All information presented in this document should be attributed to its referenced source and should not be considered a reflection of other organizations cited in the text.

Condition/Disease Specific Information

Epidemiology of Condition/Disease

A developmental delay, disorder, or disability refers to the presence of one or more of a diverse group of chronic conditions that hinders a child from developing age-appropriate cognitive, emotional, social, behavioral, psychological, or motor skills such as learning, communicating with adults, playing with other children, or walking. Developmental disabilities can begin at any time during childhood and, depending on the severity of the condition, can result in delayed learning (such as a speech impediment that can be overcome with speech therapy), a physical or mental impairment (such as dyslexia), or a permanent disability (such as cerebral palsy or mental retardation).

Examples of developmental disabilities include:

- Attention deficit/Hyperactivity disorder (ADD/ADHD)
- Autism spectrum disorders
- Cerebral palsy
- Depressive or anxiety disorders
- Epilepsy
- Hearing loss
- Learning disorders such as dyslexia
- Mental retardation
- Muscular dystrophy
- Speech disorder
- Tourette syndrome and other tic disorders
- Vision impairment

Approximately 6.6% of children (aged 5 to 17 years) in the United States have ADD, 3.6% have a developmental delay (DD), 8.2% have a learning disability (LD), and 13.6% have a mental health problem.⁵

Children with developmental disabilities have poorer health outcomes, a lower level of education attainment, and higher rates of delinquency and incarceration

than do children without disabilities. Poor outcomes associated with developmental delays and disabilities include:

Reduced educational attainment

- Poor school performance
- Reduced school attendance

Poor overall health status

- Increased rate of injuries
- Increased rate of emergency room visits, doctor visits, and hospitalizations
- Longer hospital stays
- Higher rates of mental illness and behavioral problems

Social problems

- Poor peer relationships
- Increased risk of substance abuse
- Increased risk of delinquency and violence in adolescence and adulthood

**Condition/Disease
Risk Factors**

There are multiple risk-factors for developmental delays, disabilities, and disorders.⁶⁻⁸

Value of Prevention

**Economic Burden of
Condition/Disease**

The economic and social burden of developmental disabilities is great. The poor health and social outcomes of children with developmental disabilities result in excess medical, education, and criminal justice system costs for families, employers, and communities. The *lifetime* direct and indirect costs for persons born in 2000 with developmental disabilities were estimated to equal \$51.2 billion for persons with mental retardation, \$11.5 billion for persons with cerebral palsy, \$2.1 billion for persons with hearing loss, and \$2.5 billion for persons with vision impairment (all figures in year 2003 dollars).⁹ Indirect costs for the developmentally disabled person include the value of productivity losses in the workplace and household because of premature death, inability to work, or limitation in the amount and type of work that can be performed.

The excess medical costs associated with developmental disabilities are well-documented. For example, children with ADHD have higher health-related expenses than do children without developmental delays and disabilities. In fact, compared to children who develop normally, children with ADHD have 2.6 times as many medical claims and average nearly \$1,000 per year in added medical costs (the average annual per patient cost for a child with ADHD in 1998 was \$1,574 compared to \$541 for a child without ADHD).¹⁰ Further, family members of children with ADHD have per-capita annual direct and indirect costs nearly twice that of the family members of children without ADHD (\$2,728 compared to \$1,440).¹⁰

	<p>Similarly, results from Washington State Medicaid claims data show that, compared to children who develop normally, children with developmental delays:</p> <ul style="list-style-type: none"> • Are at least 5 times more likely to have chronic health conditions such as gastrointestinal disorders, central nervous system disorders, and conditions of the ear, nose, and throat; • Have 1.5 times as many physician visits during their first 5 years of life; • Have more hospitalizations during their first 5 years of life, even when factors such as health status are controlled; and • Have more than 10 times the number of visits to specialty practitioners such as physical and occupational therapists, speech therapists, and audiologists.¹¹ <p>This additional need for healthcare translates into added costs for employers.</p>
<p>Workplace Burden of Condition/Disease</p>	<p>While employers are not directly impacted by the societal costs of developmentally disabled children, the added cost to the healthcare system should be of major concern to employers. Further, children with developmental delays and disabilities are a source of <i>indirect</i> costs to employers due to the fact that affected children experience more health problems and therefore require more substantial parental caregiving than do children without developmental problems. The added time and stress associated with intensive caregiving may result in employees experiencing higher medical claims themselves (due to increased health problems or depression), and lower productivity, increased absenteeism, or an early exit from the workforce. For example, the mothers of children with disabling conditions are estimated to lose an average of approximately 5 hours of work per week equaling 250 hours per year.¹² Assuming an hourly cost of \$12 to \$20 (including fringe benefits), that implies a lost productivity cost of \$3,000 to \$5,000 per child, per year.¹²</p>
<p>Economic Benefit of Preventive Intervention</p>	<p>Screening and early intervention services may reduce long-term societal costs. However, there is no direct evidence to support cost-savings associated with screening or early detection.¹³</p>
<p>Estimated Cost of Preventive Intervention</p>	<p>In 2004, the private-sector cost of a well-child visit that included developmental screening averaged \$83; approximately 95% of all paid claims fell within the range of \$30 to \$127 dollars. The private-sector cost of a limited developmental screen (e.g., Developmental Screening Test II, Early Language Milestone Test) averaged \$27 and 95% of all paid claims fell within the range of \$0 to \$95. The private-sector cost of an extended developmental test (i.e., assessment of motor, language, social, adaptive, and/or cognitive functioning by standardized assessment instruments) averaged \$144 and 95% of all paid claims fell within the range of \$0 to \$466.¹³</p>
<p>Estimated Cost of Treatment</p>	<p>The cost of treatment will vary widely depending on the type and severity of the condition.</p>
<p>Cost-Effectiveness and/or Cost-Benefit Analysis of Preventive Intervention</p>	<p>Screening and early intervention services may reduce long-term societal costs. However, there is no direct evidence to support cost-savings associated with screening or early detection.¹³</p>

Preventive Intervention Information

Preventive Intervention: Purpose of Screening

Screening tools are designed to identify children who may have a delay or disability and thus need more intensive diagnostic assessment and possible intervention or treatment. The purpose of screening is to identify children affected by developmental delays and disabilities when they are still developmentally receptive and malleable and therefore most responsive to interventions.

Benefits and Risks of Intervention

Research has shown substantial benefits to early recognition and intervention, especially for certain conditions. For example, children with autism who are identified early in life and receive specialized interventions have significantly improved cognitive, language, and motor skills and attain a higher level of education than do autistic children who are identified later in life.¹⁴⁻¹⁵ Early intervention can also improve the cognitive developmental trajectories of children with developmental disabilities and decrease conduct problems at home and in the classroom (resulting in an increased rate of high school graduation and decreased juvenile and adult arrests).¹⁶⁻¹⁷

The risks of screening for developmental delays and disabilities include the possibility of a negative influence on the parent's perception of their child, the added time and costs associated with screening and—as with all screenings—the risk of false-positives which can produce anxiety and subject the child and parent to unneeded tests and evaluations. Research has found that false-positive rates can reach 15% to 30% for developmental screening.¹³ False-positive results can place an extraordinary burden on the healthcare system, erode trust in the system, and potentially influence parents' perception of their child.¹⁸ However, some research has found children with false-positives perform substantially lower than do children with true-negative scores on measures of intelligence, language, and academic achievement indicating that while these children do not have a developmental disability they may nonetheless benefit from further assessment and referral to services such as Head Start and specialized day care.¹⁸⁻¹⁹

The benefits of early recognition and the opportunity for early intervention are expected to outweigh the risks and costs associated with screening.

Initiation, Cessation, and Interval of Screening

Research is insufficient to determine the most efficacious age at which to screen for, diagnose, and treat specific developmental disorders. The AAP recommends screening all infants and young children due to the availability and importance of 1) early intervention services for children birth to 3 years of age, and 2) early childhood education services for children age 3 to 5 years.

Developmental concerns should be addressed among other health topics at each preventive care visit during the first 5 years of life. Developmental surveillance, asking for example, “Do you have any concern about your child's development, learning, or behavior?” is important at each visit.

Structured screening should occur at the 9, 18, and 30-month visits.²

Intervention Process

Developmental screening consists of a brief assessment conducted by a parent and/or health care provider that can include direct observation, patient (child) elicitation (i.e., asking the child to name three colors), interviewing parents of a child expressing usual behavior, and physical testing (e.g., measuring a child's ability to visually track objects). Screening tools help a clinician assess a child's attainment of developmental milestones—the physical, cognitive, and behavioral skills that are necessary components of a child's development. Developmental screening is best conducted by a primary care provider who has knowledge of the child's health and consistent contact with the child.

Treatment Information

Providers should refer children with development disabilities to Early Intervention (EI) services and other developmentally appropriate services, as medically indicated. Health benefits should include provisions for diagnostic follow-up and treatment services.

Strength of Evidence for the Clinical Preventive Service

The level of evidence supporting the recommendations contained in this section is described below.

Recommended Guidance:

American Academy of Pediatrics (AAP)

Strength of Evidence: Not Specified

- The AAP recommends regular, universal developmental screening of infants and young children by primary pediatric healthcare providers at 9, 18, and 30 months, using standardized screening tools with high specificity and sensitivity, to identify children in need of further assessment and diagnosis, and appropriate referral for early intervention and education services, as indicated.²

Note: In 2006, the U.S. Preventive Services Task Force (USPSTF) found that evidence was “insufficient” to recommend for or against routine use of brief, formal screening instruments in primary care to detect speech and language delay in children up to 5 years of age.¹ The USPSTF did not examine other aspects of developmental screening.²⁰

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Campbell KP, Lollar D, Chattopadhyay S. Child development evidence-statement: screening. In: Campbell KP, Lanza A, Dixon R, Chattopadhyay S, Molinari N, Finch RA, editors. *A Purchaser's Guide to Clinical Preventive Services: Moving Science into Coverage*. Washington, DC: National Business Group on Health; 2006.

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