Developmental-behavioral surveillance and screening in primary care

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INTRODUCTION

Developmental and behavioral surveillance is recommended for all children during preventive health care visits. In the United States, periodic developmental-behavioral screening is also recommended. This topic outlines the recommendations for surveillance, screening, and evaluation.

Screening for autism spectrum disorders is discussed separately. (See "Autism spectrum disorder: Surveillance and screening in primary care" and "Autism spectrum disorder: Screening tools".)

TERMINOLOGY

- **Developmental disabilities** – Developmental disabilities (also called developmental disorders) are a heterogeneous group of conditions caused by impairments in learning, language, behavior, or motor skills. Examples include intellectual disability, autism spectrum disorder, attention deficit hyperactivity disorder, cerebral palsy, and hearing impairment [1].
- **Developmental surveillance** – Developmental surveillance is the process through which children who have developmental delay or are at risk for developmental delay are identified [2-4]. Developmental surveillance occurs at preventive care visits and consists of eliciting parental concerns, identifying risk factors, and monitoring development. (See 'Approach to surveillance' below.)
- **Developmental screening** – Developmental screening refers to the use of a standardized test to identify asymptomatic children who are at risk for a developmental disorder; children who screen positive should undergo a developmental-behavioral evaluation [2]. (See 'Approach to screening' below.)
- **Developmental-behavioral evaluation** – A developmental-behavioral evaluation is a comprehensive review and assessment of development and behavior to identify a developmental disorder and develop a treatment plan [2,5]. (See 'Positive screen' below.)

EPIDEMIOLOGY

Developmental and behavioral problems are common in children and adolescents. The 2016 Annual Report from the Centers for Disease Control and Prevention estimates that 16.7 percent of children have a developmental disability or a developmental delay [6]. In a nationally representative cross-sectional survey (1997-2016), the parent-reported prevalence of intellectual disability, autism spectrum disorder (ASD), and other developmental delays among children age 3 through 17 years ranged between 6 and 15 percent, depending upon how the questions were worded [7-9].

It is estimated that 20 to 25 percent of youth in the United States will meet criteria for a mental health disorder with severe impairment (defined by endorsement of "a lot" or "extreme" impairment in daily activities or "severe or very severe" distress) during their lifetime [10]. Anxiety disorders are most common, followed by behavioral disorders, mood disorders, and substance use disorders. The median age of onset in a national survey of adolescents aged 13 to 18 years varied with the disorder:

- Anxiety – 6 years
- Behavioral disorders (eg, attention deficit hyperactivity disorder [ADHD], oppositional defiant disorder, conduct disorder) – 11 years
- Mood disorders – 13 years
- Substance use disorders – 13 years

The prevalence of developmental disabilities has increased since the 1990s, with most of the increase due to ASD and ADHD [7]. Factors hypothesized to have contributed to the increased prevalence include improved identification, increased survival of children born preterm, increased survival of children born with birth defects and genetic disorders, and increased prenatal risk factors such as older parental age and multiple births. The prevalence of specific conditions is discussed separately. (See "Intellectual disability in children: Evaluation for a cause", section on 'Prevalence' and "Autism spectrum disorder: Terminology, epidemiology, and pathogenesis", section on 'Prevalence' and "Attention deficit hyperactivity disorder in children and adolescents: Epidemiology and pathogenesis", section on 'Prevalence'.)

BENEFITS OF SURVEILLANCE AND SCREENING

The combination of surveillance and screening for developmental-behavioral problems in children increases early identification [11-13], enabling earlier intervention, which is associated with improved outcomes [14-21].

The response to developmental-behavioral interventions is greatest in early childhood [22]. Children who are identified after school entry miss the opportunity to participate in early developmental or early childhood services. Children with undetected developmental delays are at increased risk for social and emotional problems, early school problems, and school failure [2].

Early identification permits earlier treatment of underlying medical conditions that may present with developmental-behavioral problems (eg, metabolic disorders). Early identification also permits parents to better match their expectations to their child's abilities, to provide developmentally appropriate activities and stimulation, and to feel that they are doing all that they can to assist their child [18,23]. In observational studies, developmental surveillance and screening also have been associated with increased numbers of parents reporting that their concerns were addressed and questions answered [24].

In before-and-after observational studies and randomized trials, developmental-behavioral surveillance and screening are associated with increased identification of developmental-behavioral concerns, increased referrals to early intervention services, and increased numbers of children qualifying for early intervention services [11-13].

Systematic reviews, prospective observational studies, and a few randomized trials have demonstrated better short- and long-term outcomes when developmental problems are identified early and services are provided, particularly for children at increased risk [14-21,25-27]. Early developmental/childhood intervention services for children with developmental disabilities have been associated with decreased need for special education services during the school years, higher graduation rates, reduced teen pregnancy rates, higher employment rates, and a decrease in criminal behavior and violence [19,22]. Several studies have demonstrated benefits of early intervention sustained for 15 to 49 years after the intervention [25,28-30].

PERCEIVED HARMS AND BURDENS OF SURVEILLANCE AND SCREENING

Potential harms anticipated by clinicians in delivering developmental surveillance and screening are related to false positive results, false negative results, and the burden of surveillance and screening.

- **False positive results** – Potential harms of false positive surveillance or screening include [31-33]:
  - Unnecessary developmental evaluation; high numbers of false positive screens may overwhelm evaluation centers with referrals (a limited resource in many settings)
  - Undue anxiety or stigma for families

False positive results can be minimized by choosing screening tests that have been validated in the general population and have a specificity of at least 70 percent [34,35]. (See 'Choice of screening test' below.)

- **False negative results** – False negative results fail to identify or delay identification of children with developmental-behavioral problems, resulting in under-referral or delayed referral to early intervention services.

  False negative results can be minimized by choosing screening tests that have been validated in the general population and have a sensitivity of at least 70 percent [34,35]. (See 'Choice of screening test' below.)

- **Burden of screening** – The process of screening may increase the burden on the pediatric practice (by requiring additional time or documentation). In a pilot project that evaluated the implementation of the 2006 American Academy of Pediatrics recommendations of developmental and behavioral screening, participating practices struggled with completion of screening, making appropriate referrals to early intervention programs and medical specialists, and tracking referrals [36].

  Although some providers view the time that it takes to provide screening as a burden, an observational study found no change in visit duration after implementation of broad-based developmental screening [24].

APPROACH TO SURVEILLANCE

Developmental surveillance is the process through which children who may have a developmental delay or be at risk for a developmental delay are recognized [2,3]. It is performed at every well-child visit and at any time a concern is raised [2,37]. We follow the approach to developmental surveillance recommended by the American Academy of Pediatrics (AAP) [2]:

- **Elicit and attend to parental concerns** – Ask if the parents have any concerns about their child's development, behavior, or learning. Observational studies suggest that parental estimates of their child's development are accurate [38]. Parental concerns are an effective method for early detection of developmental and behavioral problems, but lack of parental concerns does not exclude developmental delay [39-41].

- **Maintain a developmental history** – Maintain a developmental history to review at subsequent visits. Reviewing the developmental history over time can identify developmental abnormalities or deviations (eg, achievement of skills out of typical sequence, regression of skills) that warrant further investigation (eg, for cerebral palsy, autism spectrum disorder).

  The developmental history can be obtained by asking, "What changes have you seen in your child's development since our last visit?" or by asking about age-specific skills in the various domains of development (ie, gross motor, fine motor, adaptive [self-help], cognitive/academic, communication [receptive and expressive language], social-emotional):

  - 0 through 12 months (table 1)
  - 12 through 24 months (table 2)
  - 2 through 3 years (table 3)
  - 4 through 8 years (table 4)

  We assess age-specific motor skills (table 5) during well-child visits as part of developmental surveillance, as recommended by the AAP Neuromotor Screening Expert Panel [42].

- **Observe parent-child interactions** – Make accurate observations of the child and parent-child interaction (eg, the warmth, caring, and responsiveness of the parent to the child's cues, as well as the extent to which the child looks to the parent for comfort and support) [43].

- **Identify risk and protective factors** – Identify a child's risk and protective factors. Children with multiple established risk factors should have more frequent visits for ongoing surveillance or may be referred for a developmental-behavioral evaluation [2,44,45]. (See 'Developmental or behavioral evaluation' below.)

  - **Risk factors** – Risk factors for developmental and behavioral problems include [44,46-50]:

- Prenatal exposures (eg, infections, alcohol, smoking)
- Birth complications (eg, prematurity or low birth weight)
- Perinatal infections (eg, herpes simplex virus)
- Medical conditions (eg, lead poisoning, congenital heart disease [51,52])
- Genetic conditions (eg, Down syndrome, fragile X syndrome)
- Poverty, including housing or food insecurity [46-48]
- Parental unemployment or mental health problems (eg, depression, anxiety, substance use)
- Parents with limited education/literacy [53]
- Teenage parents

- **Protective/resilience factors** – Factors that protect against developmental and behavioral problems include [20,22]:

  - Strong connections within a loving, supportive family
  - Active parent-child engagement (eg, teaching, soothing, back-and-forth conversation, sharing books, etc)
  - Opportunities to interact with other children
  - Opportunities to grow in independence in an environment with appropriate structure

- **Record findings and plans** – Maintain an accurate record of the process and findings of surveillance across visits. This should include specific actions or plans (eg, earlier follow-up, referrals). (See 'Follow-up' below.)

Developmental-behavioral surveillance is supported by multiple professional societies including the Canadian Task Force on Preventive Health Care [4].

APPROACH TO SCREENING

Developmental screening refers to the use of a standardized test to identify asymptomatic children at risk for a developmental disorder; children who screen positive should undergo developmental-behavioral evaluation [2]. Developmental-behavioral evaluation is necessary to diagnose developmental-behavioral disorders. (See 'Positive screen' below.)

Our approach to developmental-behavioral screening is largely consistent with that recommended by the American Academy of Pediatrics (AAP) [2,34,42].

Rationale — The use of standardized screening tests may enhance clinical impressions formed through developmental surveillance. Clinical impressions of development and behavior are less accurate than validated screening tests, and relying on surveillance alone may miss children with developmental-behavioral problems who would benefit from intervention [2,11,31]. In a systematic review of heterogeneous studies of primary care identification of developmental-behavioral problems without validated screening tests, the sensitivity ranged from 14 to 54 percent and specificity ranged from 69 to 100 percent [31].

When to screen

Children <4 years — We provide developmental-behavioral screening with a validated test [2]:

- Any time a parent or clinician has concerns about development (eg, not sitting by age 9 months, lack of joint attention by 12 months); the screening test may be targeted to the concern (eg, motor development, attention) (see 'Patient and practice characteristics' below)
- At specific well-child visits; routine universal and periodic screening may identify problems missed with surveillance alone or screening at a single point in time; repeated screening permits identification of developmental-behavioral problem as they emerge [2,11].

  We provide developmental-behavioral screening at the following well-child visits:

- **9-month visit** – Screening at the 9-month visit may identify motor (table 6), vision, hearing, or communication problems.
- **18-month visit** – General developmental screening at the 18-month visit may identify motor delays (table 6), language delays, and symptoms of autism spectrum disorders (ASD).

  Specific screening for ASD is recommended at the 18-month visit and is discussed separately. (See "Autism spectrum disorder: Surveillance and screening in primary care", section on 'ASD screening' and "Autism spectrum disorder: Screening tools".)
- **24-month visit** – Repeating ASD-specific screening at the 24-month visit facilitates identification of children with ASD who were missed at the 18-month screening.

  In addition to ASD-specific screening, we provide general developmental screening at the 24-month visit if the patient/family may have difficulty returning for the 30-month visit.
- **30-month visit** – Screening at the 30-month visit may identify motor (table 6), language, and cognitive delays.

The benefits of developmental-behavioral screening were demonstrated in a multicenter randomized trial that compared developmental screening using validated screening tests (Ages & Stages Questionnaire-II and Modified Checklist for Autism in Toddlers) with office assistance, validated tools without office assistance, and milestone-based developmental surveillance in 2103 children <30 months of age [11]. Developmental delays were identified in 21 percent of children. Validated screening tests with and without office assistance increased identification of delays (23 and 27 versus 13 percent), referrals to early intervention (20 and 18 versus 10 percent), and qualification for early intervention services (7 and 5 versus 3 percent). Validated screening tools also decreased time to identification and referral. Among children referred to early intervention, there was no difference in the percentage eligible for services, suggesting that use of screening tests did not result in over-referral.

These findings are supported by before-and-after observational studies demonstrating an association between validated screening tests and increased identification of developmental-behavioral concerns, increased referrals to early intervention services, and increased numbers of children qualifying for early intervention services [12,13]. Although these are surrogate outcomes and studies demonstrating improved clinically important outcomes in children who were screened compared with those who were not screened are lacking [4], there appears to be general consensus that early intervention is associated with improved cognitive and social outcomes [22].

Children ≥4 years

- **Four-year old visit** – Developmental-behavioral screening at the four-year visit should focus on school readiness (eg, fine motor, gross motor (table 6), handwriting, communication, and self-help skills) [2]. Screening at age 4 years provides the opportunity for remediation before kindergarten entry to optimize successful kindergarten participation and peer interaction [42]. (See "School readiness for children in the United States", section on 'Readiness of the child'.)
- **Children ≥5 years** – We agree with the AAP Task Force on Mental Health recommendation to screen asymptomatic children ≥5 years annually for mental health disorders and impaired psychosocial functioning with a validated behavioral screening test [54].

  Additional indications for mental health screening include:

  - Psychosocial concerns identified by the family
  - Family disruption
  - Poor school performance
  - Behavioral difficulty
  - Recurrent somatic complaints
  - Involvement of a social service or juvenile justice agency

Choice of screening test — Screening tests identify patients who warrant further evaluation; they are not reference standards that result in diagnosis.

Screening test performance — Terms that are used to describe screening test performance or quality of measurements include sensitivity, specificity, positive and negative predictive value, likelihood ratios, concurrent validity, and predictive validity (table 7). These terms are discussed separately. (See "Glossary of common biostatistical and epidemiological terms" and "Evaluating

diagnostic tests".)

Tests with high sensitivity have few false negative results, minimizing missed or delayed diagnosis; tests with high specificity have few false positive results, minimizing over-referral. Sensitivity and specificity >70 percent is generally acceptable for developmental-behavioral screening tests [34,35], although the threshold may vary with the targeted condition and the consequences of a false negative or false positive result.

Tests with high positive predictive value increase the likelihood that children with positive (or "failed") screening test results have the targeted developmental or behavioral condition. Tests with high negative predictive value increase the likelihood that children with negative (or "passed") screening test results do not have the condition.

Patient and practice characteristics — The choice among validated developmental-behavioral screening tests with acceptable test performance is individualized according to:

- **Patient characteristics** (eg, age, language spoken at home, literacy level). Screening tests are targeted to the age range in which the disorder emerges and is identifiable (table 8 and table 9).
- **The targeted condition** (eg, What is the prevalence? What are the consequences of false negative or false positive results?).
  - **Developmental screening tests** – Developmental screening tests target conditions affecting the traditional developmental domains (eg, cognitive, language, motor, social). Some focus on a specific domain; others on general development. Some developmental screening tests also screen for behavioral concerns. Each developmental screening tool has its own threshold level for what is considered a "positive" test or a test that identifies increased risk (table 8 and table 10).

    For general developmental-behavioral screening of children without identified concerns at periodic well-child visits, we prefer screening tests that target multiple domains (ie, broadband screens) (table 8).

    For children with specific concerns (eg, language delay), we prefer domain-specific screening tests. Screening for language delay and ASD is discussed separately. (See "Expressive language delay ("late talking") in young children", section on 'Screening' and "Autism spectrum disorder: Surveillance and screening in primary care", section on 'ASD screening'.)
  - **Behavioral screening tests** – Behavioral screening tools target behavioral conditions (eg, attention deficit hyperactivity disorder), social emotional development, and self-help skills (eg, feeding, sleeping, toileting) (table 9).

    In young children, challenging behavior or delayed/regressed self-help skills may be the only manifestation of social-emotional distress (eg, related to exposure to toxic stress, insufficient attachment, or innate vulnerability).

    Screening tests for alcohol and substance use are discussed separately. (See "Screening tests in children and adolescents", section on 'Tobacco, alcohol, and substance use'.)
- **Practice considerations** (eg, Who can deliver the test? How long does it take to score and interpret? Can it be integrated into the electronic medical record?) (table 8 and table 9).
- **Feasibility of administration** (table 11).

When all else is equal, clinicians generally prioritize their choices by how long it takes to administer and score the test and cost.

FOLLOW-UP

Positive screen — When the results of a developmental-behavioral screen are "positive" or concerning, the child should undergo developmental-behavioral and medical evaluations [2]. These evaluations aim to identify developmental disorders or medical conditions that could contribute to delayed development or behavioral concerns. In addition, the child should be referred for early intervention/early childhood services.

Developmental or behavioral evaluation — The developmental or behavioral evaluation is a comprehensive review and assessment of a child's development and behavior in order to diagnose a developmental disorder and develop a treatment plan. The evaluation may include behavioral observations, thorough parent report of medical and developmental history, psychologic testing, and/or

speech and language or motor (occupational therapy/physical therapy) assessments [5].

Developmental or behavioral evaluations can be conducted by a medical specialist such as a pediatric neurologist, developmental-behavioral pediatrician, child psychiatrist, neurodevelopmental pediatrician, or pediatric physiatrist [2,5]. Evaluation by a psychologist, speech and language pathologist, audiologist, social worker, physical therapist, or occupational therapist also may be warranted, depending on the presenting concern and community availability.

- **Disorder identified** – If a developmental disorder is identified during the developmental or behavioral evaluation ("true positive" screening results), the child should be identified within the office as a child with special health care needs and followed more closely in the medical home [2]. Additional medical evaluation may be necessary. (See "Children and youth with special health care needs" and 'Medical evaluation' below.)

- **Disorder not identified** – If a developmental disorder is not identified during the developmental or behavioral evaluation ("false positive" screening results), close follow-up, ongoing developmental surveillance, and age-appropriate and concern-based screening should be performed as needed [2].

  Children who screen positive but whose developmental-behavioral evaluation does not identify a developmental-behavioral condition may benefit from more frequent follow-up, psychosocial supports, or primary care interventions [55]. In a systematic review of 48 studies, several primary care interventions for children younger than three years were associated with reduction in developmental delay (Healthy Steps, Video Interaction Project), improved cognitive or language development (Parenting Intervention, Care For Development, Touchpoints), and improved behavior (Incredible Years, Positive Parenting Program, Parent-Child Interaction Therapy, PriCARE, Video Interaction Project) [56].

Medical evaluation — The baseline medical evaluation of a child with a positive developmental screen should include [2]:

- Hearing evaluation (see "Hearing loss in children: Screening and evaluation")
- Vision screen (see "Vision screening and assessment in infants and children")
- Review of the newborn metabolic screen (see "Inborn errors of metabolism: Identifying the specific disorder", section on 'Newborn screening')
- Review of growth parameters, particularly head circumference (see "Normal growth patterns in infants and prepubertal children", section on 'Abnormal patterns of growth')
- Updated family, social, and environmental history looking for risk factors for developmental delays (see 'Approach to surveillance' above)

Additional evaluation may be necessary if the child is identified with a specific disorder. The evaluation depends upon the disorder, as examples:

- Autism spectrum disorder (see "Autism spectrum disorder: Evaluation and diagnosis", section on 'Evaluation for associated conditions')
- Cerebral palsy (see "Cerebral palsy: Evaluation and diagnosis")
- Intellectual disability (see "Intellectual disability in children: Definition, diagnosis, and assessment of needs" and "Intellectual disability in children: Evaluation for a cause")

Early intervention or special education services

- **Children <3 years** – In the United States, children <3 years with suspected or confirmed developmental-behavioral problems should be referred to the state's early childhood intervention program as mandated by the Individuals with Disabilities Education Act (IDEA) Part C (also called "Zero to Three" or "early intervention" [EI]) [57-59].

  Referral to EI is appropriate for children who have been identified with a developmental or behavioral problem, as well as those who are at risk (eg, those who have a positive screen but have not yet undergone developmental-behavioral evaluation) [2,57]. Diagnosis of a developmental or behavioral disorder is not necessary for EI referral. EI professionals will evaluate the child to see if they qualify for EI services and what type(s) of services are best.

  The contact information for the EI office in each state is provided by Autism Speaks. A parents' guide for Early Intervention is available through the Center for Parent Information and Resources.

- **Children ≥3 years** – If a child is ≥3 years, the local school system can provide an evaluation to determine if the child is eligible for special education services through the public school system [2]. The National Early Childhood Technical Assistance Center provides local contact information. Eligibility requirements for public school special education services vary from state to state.

  Parents must request the evaluation and consent to evaluation. According to the IDEA, the evaluation must be completed by the school within 60 school days of the parent's signing the consent [58]. The evaluation is followed by an Individualized Education Program (IEP) if the child is eligible; the meeting to develop the IEP must be conducted within 30 days of determining that the child is eligible [57]. Parents and providers should check with local and state laws to determine specific local or regional timelines for school evaluations [57]. (See "Definitions of specific learning disability and laws pertaining to learning disabilities in the United States", section on 'Individuals with Disabilities Education Act'.)

Negative screen — Follow-up for children with negative (or "passed") developmental-behavioral screen is influenced by clinician and/or parent concerns.

No concerns — If the screen is negative and neither the clinician nor the parents have concerns, the child is unlikely to have a developmental or behavioral problem. The parents can be reassured and preventive care, including ongoing developmental surveillance and age-appropriate developmental screening, should continue as scheduled [2].

Clinician or caregiver concerns — If the screen is negative but was performed because of clinician or caregiver concern identified through developmental surveillance, follow-up is individualized according to the type and level of concern; options include one or a combination of the following [2]:

- Referral for developmental or behavioral evaluation
- Referral for early intervention or special education services
- Referral to an early prevention program (eg, Head Start)
- Enhanced surveillance and repeat developmental-behavioral screening before the next well-child visit; more frequent follow-up helps to assure prompt referral to appropriate services or providers if additional concerns arise

RESOURCES

Resources for clinicians and parents/caregivers are provided in the table (table 12).

SUMMARY AND RECOMMENDATIONS

- The combination of developmental surveillance and screening for developmental-behavioral problems increases early identification, enabling early intervention, which is associated with improved outcomes. Early identification also permits earlier treatment of underlying medical conditions that present with developmental-behavioral problems. (See 'Benefits of surveillance and screening' above.)
- Perceived potential harms of screening include unnecessary referrals for developmental-behavioral evaluation, undue anxiety or stigma for families, missed or delayed diagnosis, and increased burden (eg, time, documentation) for pediatric practices. (See 'Perceived harms and burdens of surveillance and screening' above.)
- Developmental surveillance is the process through which children with developmental delay or who are at risk for developmental delay are identified. It is an essential component of routine well-child care and consists of eliciting and attending to parental concerns, maintaining a developmental history, observing parent-child interactions, identifying risk and protective factors, and formulating findings and plans. (See 'Approach to surveillance' above.)
- Developmental-behavioral screening refers to the use of a standardized test to identify asymptomatic children at risk for a developmental disorder; children who screen positive should undergo developmental-behavioral evaluation. Screening enhances clinical impressions formed through developmental surveillance. (See 'Approach to screening' above and 'Rationale' above.)
- Our approach to developmental-behavioral screening varies with age and symptoms:

- For children of all ages, we provide developmental-behavioral or mental health screening any time a parent or clinician has concerns about development, behavior, or mental health. The screening test may be targeted to the concern (eg, motor development, attention) (table 8 and table 9). (See 'Children <4 years' above and 'Children ≥4 years' above.)
- For children younger than four years who have no symptoms or signs of developmental-behavioral problems, we suggest periodic developmental screening (**Grade 2C**). We provide general developmental screening with a validated screening test at the 9-month, 18-month, and 24- or 30-month visits and screening for autism spectrum disorder at the 18- and 24-month visits (table 8). Clinical impressions of development and behavior are less accurate than validated screening tests, and relying on surveillance alone may miss children with developmental-behavioral problems who would benefit from intervention. (See 'Children <4 years' above and "Autism spectrum disorder: Surveillance and screening in primary care".)
- At the four-year well-child visit, we focus developmental-behavioral screening on school readiness and motor skills (table 6). (See 'Children ≥4 years' above and "School readiness for children in the United States", section on 'Readiness of the child'.)
- For children ≥5 years who have no symptoms of mental health disorders, we suggest periodic mental health screening (table 9) (**Grade 2C**). We provide mental health screening annually with a validated behavioral screening test. (See 'Children ≥4 years' above.)

- Children who have a positive screening test should undergo developmental-behavioral or mental health evaluation, medical evaluation, and be referred for early intervention or early childhood services. (See 'Positive screen' above.)
- If the screen is negative and neither the clinician nor the parents have concerns, ongoing developmental surveillance and age-appropriate developmental-behavioral surveillance should continue as scheduled. If the screen is negative but was performed because of clinician or caregiver concern, follow-up is individualized according to the type and level of concern. (See 'Negative screen' above.)

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Topic 615 Version 33.0

GRAPHICS

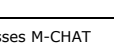
Developmental milestones: 0 through 12 months

	Approximate chronologic age											
	1 month	**2 months**	**3 months**	**4 months**	**5 months**	**6 months**	**7 months**	**8 months**	**9 months**	**10 months**	**11 months**	**12 months**
Gross motor	▪ Turns head in supine ▪ Chin up in prone	▪ Chest up in prone ▪ Tries to steady head briefly when held	▪ Props on forearms in prone ▪ Rolls to side	▪ Sits with trunk support ▪ No head lag when pulled to sit ▪ Props on wrists ▪ Rolls front to back	▪ Sits with pelvic support ▪ Rolls back to front ▪ Parachute sits with arms supporting trunk (anterior protection)	▪ Sits momentarily propped on hands ▪ Pivots in prone (on belly) ▪ Bears weight on one hand in prone	▪ Bounces when held ▪ Sits without support (steady) ▪ Puts arms out to sides for balance (lateral protection)	▪ Gets into sitting ▪ Commando crawls ▪ Pulls to sitting/kneeling	▪ "Stands" on feet and hands ▪ Begins creeping ▪ Pulls to stand ▪ Crawls with all four limbs straightened (bear walks)	▪ Creeps well ▪ Cruises around furniture with two hands ▪ Stands, one hand held ▪ Walks, two hands held	▪ Walks, one hand held ▪ Pivots in sitting ▪ Cruises furniture holding on with one hand ▪ Stands for a few seconds	▪ Stands well with arms high and legs splayed (posterior protection) ▪ Independent steps
Fine motor/writing	▪ Hands fisted near face	▪ Hands unfisted 50% ▪ Retains rattle if placed in hand ▪ Holds hands together	▪ Hands unfisted 50% ▪ Inspects fingers ▪ Bats at objects	▪ Clutches at clothes ▪ Reaches persistently ▪ Plays with rattle ▪ Holds hands predominately open	▪ Grasps cube using whole hand (palmar grasp) ▪ Transfers objects: Hand-mouth-hand ▪ Holds hands together ▪ Reaches/grasps dangling ring	▪ Transfers hand-hand ▪ Rakes pellet ▪ Takes second cube, holds on to one ▪ Reaches with one hand	▪ Grasps using side of hand (radial-palmar grasp)	▪ Bangs spoon after a demo ▪ Grasps with all four fingers and side of thumb (scissor grasp) ▪ Takes cube out of cup ▪ Pulls large peg out	▪ Grasps with two finger and thumb below (radial-digital) ▪ Bangs two cubes together	▪ Clumsy release of cube ▪ Grasps pellet with side of index finger and thumb (inferior pincer grasp) ▪ Isolates index finger and pokes	▪ Throws objects ▪ Stirs with spoon	▪ Scribbles after demo ▪ Fine pincer grasp of pellet ▪ Holds crayon ▪ Attempts tower of two cubes
Self-help	▪ Sucks well	▪ Opens mouth at sight of breast or bottle	▪ Brings hands to mouth	▪ Briefly holds onto breast or bottle	▪ Gums/mouths pureed food	▪ Feeds self crackers ▪ Places hands on bottle	▪ Refuses excess food	▪ Holds own bottle ▪ Finger feeds Cheerios or string beans	▪ Bites, chews cookie	▪ Drinks (not sucks) from cup held for him/her	▪ Cooperates in dressing	▪ Cooperates in dressing ▪ Finger feeds part of meal ▪ Takes hat off
Cognitive/academic	▪ Gazes at black-white objects ▪ Follows face	▪ Follows large highly contrasting objects ▪ Recognizes mother	▪ Reaches for parent's face ▪ Follows objects moved in circle (in supine) ▪ Regards toys	▪ Mouths objects ▪ Stares longer at novel faces than familiar ones ▪ Shakes rattle ▪ Reaches for ring/rattle	▪ Turns head to look for dropped spoon ▪ Regards pellet or small cracker	▪ Touches reflection and vocalizes ▪ Removes cloth on face ▪ Bangs and shakes toys	▪ Explores different aspects of a toy ▪ Observes cube in each hand ▪ Finds partially hidden object	▪ Seeks object after it falls silently to the floor	▪ Inspects parts of a bell ▪ Rings bell after demo ▪ Pulls string to obtain an attached toy out of reach	▪ Uncovers toy under cloth ▪ Pokes at pellet in bottle ▪ Tries to put cube in cup, but may not be able to let go	▪ Finds toy under cup ▪ Looks at pictures in book	▪ Rattles spoon in cup ▪ Lifts box lid to find toy
Social/emotional	▪ Discriminates mother's voice ▪ Cries out of distress	▪ Reciprocal smiling: Responds to adult voice and smiles	▪ Expression of disgust (eg, sour taste, loud sound) ▪ Visually follows person who is moving across a room	▪ Smiles spontaneously at pleasurable sight/sound ▪ Stops crying at parent's voice ▪ To and fro alternating vocalizations	▪ Recognizes caregiver visually ▪ Forms attachment: Relationship to caregiver	▪ Stranger anxiety: Recognizes familiar versus unfamiliar people	▪ Looks from object to parent and back when wanting help (eg, with a wind-up toy)	▪ Lets parents know when happy versus upset ▪ Engages in gaze monitoring: Adult looks away and child follows adult glance with own eyes	▪ Uses sounds to get attention ▪ Separation anxiety ▪ Follows a point "Oh look at..." ▪ Recognizes familiar people visually	▪ Experiences fear ▪ Looks preferentially when name is called	▪ Gives objects to adult for action after demonstration (lets adult know he/she needs help)	▪ Shows objects to parent to share interest ▪ Points in order to get desired object (proto-imperative pointing)

Receptive language	▪ Startles to loud noise	▪ Alerts to voice/sound	▪ Regards speaker	▪ Orients head in direction of a voice ▪ Stops crying to soothing voice	▪ Begins to respond to name	▪ Stops momentarily to "no" ▪ Gestures for "up"	▪ Looks toward familiar object when named ▪ Attends to music	▪ Responds to "come here" ▪ Looks for family members when asked (eg, "Where's Mama?", etc)	▪ Enjoys gesture games ▪ Orients to name well ▪ Turns head upward and diagonally to view source of sound	▪ Enjoys peek-a-boo ▪ Waves "bye-bye" back	▪ Stops activity when told "no" ▪ Bounces to music	▪ Follows one-step command with gesture ▪ Recognizes names of two objects, looks when named
Expressive language	▪ Makes sounds other than crying	▪ Coos ▪ Social smile (six weeks) ▪ Vowel-like noises	▪ Chuckles ▪ Vocalizes when talked to	▪ Laughs out loud ▪ Vocalizes when alone	▪ Says "Ah-goo" ▪ Razz, squeal ▪ Expresses anger with sounds other than crying	▪ Reduplicate babble with consonants ▪ Listens then vocalizes when adult stops ▪ Smiles/vocalizes to mirror	▪ Increasing variety of syllables	▪ Says "Mama" (nonspecific) ▪ Nonreduplicate babble ▪ Imitates sounds	▪ Says "Mama" (nonspecific) ▪ Nonreduplicate babble ▪ Imitates sounds	▪ Says "Dada" (specific) ▪ Waves "bye-bye"	▪ Says first word ▪ Vocalizes to songs	▪ Points in order to get desired object (proto-imperative pointing) ▪ Uses several gestures with vocalizing (eg, waving, reaching, etc)

Graphic 66383 Version 10.0

Developmental milestones: 12 through 24 months

	Approximate chronologic age								
	12 months	**13 months**	**14 months**	**15 months**	**16 months**	**18 months**	**20 months**	**22 months**	**24 months**
Gross motor	▪ Stands well with arms high and legs splayed (posterior protection) ▪ Independent steps	▪ Walks with arms high and out (high guard)	▪ Stands without pulling up ▪ Falls by collapse ▪ Walks well	▪ Stoops to pick up toy ▪ Creeps up stairs ▪ Runs stiff-legged ▪ Walks carrying toy ▪ Climbs on furniture	▪ Stands on one foot with slight support ▪ Walks backwards ▪ Walks up stairs, one hand held	▪ Creeps down stairs ▪ Runs well ▪ Seats self in small chair ▪ Throws ball (standing)	▪ Squats in play ▪ Carries large object ▪ Goes up stairs, one hand held	▪ Goes up stairs, holding rail, both feet on each step ▪ Kicks ball with demo ▪ Walks with one foot on walking board	▪ Walks down stairs, holding rail, both feet on each step ▪ Kicks ball without demo ▪ Throws overhand
Fine motor/writing	▪ Scribbles after demo ▪ Fine pincer grasp of pellet ▪ Holds crayon ▪ Attempts tower of two cubes	▪ Attempts to release pellet in bottle	▪ Attempts to release pellet in bottle ▪ Imitates back-forth scribble ▪ Adds third cube to a two-cube tower ▪ Puts round peg in and out of hole	▪ Builds three- to four-cube tower ▪ Places 10 cubes in cup ▪ Releases pellet into bottle	▪ Puts several round pegs in board with urging ▪ Scribbles spontaneously	▪ Makes four-cube tower ▪ Crudely imitates vertical stroke	▪ Completes round peg board without urging ▪ Makes five- to six-cube tower ▪ Completes square peg board	▪ Closes box with lid ▪ Imitates vertical stroke ▪ Imitates circular scribble	▪ Makes a single-line "train" of cubes ▪ Imitates circle ▪ Imitates horizontal line
Self-help	▪ Cooperates in dressing ▪ Finger feeds part of meal ▪ Takes hat off	▪ Drinks from cup with some spilling	▪ Removes socks/shoes ▪ Chews well ▪ Puts spoon in mouth, typically turning it over	▪ Uses spoon with some spilling ▪ Attempts to brush own hair ▪ Fusses to be changed	▪ Picks up and drinks from cup ▪ Fetches and carries objects (same room)	▪ Removes garment ▪ Gets onto adult chair unaided ▪ Moves about house without adult	▪ Places only edibles in mouth ▪ Feeds self with spoon (entire meal)	▪ Uses spoon well ▪ Drinks from cup well ▪ Unzips zippers ▪ Puts shoes on partway	▪ Opens door using knob ▪ Sucks through straw ▪ Takes off clothes without buttons ▪ Pulls off pants
Cognitive/academic	▪ Rattles spoon in cup ▪ Lifts box lid to find toy	▪ Dangles ring by string ▪ Reaches around clear barrier to obtain object ▪ Unwraps toy in cloth	▪ Dumps pellet out of bottle after demo	▪ Turns pages in book ▪ Places circle in single shape puzzle	▪ Dumps pellet out without demo ▪ Finds toy observed to be hidden under layers of covers ▪ Places circle in form board 	▪ Matches pairs of objects ▪ Re-places circle in form board after it has been turned around (usually with trial and error) 	▪ Returns to search for object hidden under cloth after not finding it in an adult's closed fists ▪ Places circle and square in form board 	▪ Completes form board with three shapes 	▪ Sorts objects ▪ Matches objects to pictures ▪ Shows use of familiar objects
Social/emotional	▪ Shows objects to parents to share interest ▪ Points in order to get desired object (proto-imperative pointing)	▪ Shows desire to please caregiver ▪ Solitary play ▪ Functional play	▪ Points at object to express interest (eg, to get parent to name it [proto-declarative pointing]) ▪ Purposeful exploration of toys through trial and error	▪ Shows empathy (eg, someone else cries, child looks sad) ▪ Hugs adult in reciprocation ▪ Recognizes without a demo that a toy requires activation and hands it to an adult if can't operate	▪ Kisses by touching lips to skin ▪ Periodically visually relocates caregiver ▪ Self-conscious: Embarrassed when aware of people observing	▪ Passes M-CHAT ▪ Engages in pretend play with other people (eg, tea party, birthday party) ▪ Begins to show shame (when done wrong) and possessiveness	▪ Begins to have thoughts about feelings ▪ Engages in tea party with stuffed animals ▪ Kisses with pucker	▪ Watches other children intensely ▪ Begins to show defiant behavior	▪ Parallel play ▪ Begins to mask emotions for social etiquette
Receptive language	▪ Follows one-step command with gesture ▪ Recognizes names of two objects, looks when named	▪ Looks appropriately when asked "Where's the ball?," etc	▪ Follows one-step command without gesture (eg, "give it")	▪ Points to one body part ▪ Points to one object of three ▪ Gets object from another room upon demand	▪ Understands simple commands (eg, "Bring to mommy") ▪ Points to one picture when named	▪ Points to two of three objects when named ▪ Points to three objects ▪ Points to self ▪ Understands "mine"	▪ Points to three pictures ▪ Begins to understand her/him/me	▪ Points to four to five pictures when named ▪ Points to five to six body parts ▪ Points to four pieces of clothing when named	▪ Follows two-step command ▪ Understands "me"/"you" ▪ Points to 5 to 10 pictures

						▪ Points to familiar people when named			
Expressive language	▪ Points in order to get desired object (proto-imperative pointing) ▪ Uses several gestures with vocalizing (eg, waving, reaching, etc)	▪ Uses three words ▪ Immature jargoning (inflections without real words)	▪ Names one object ▪ Points at object to express interest (eg, to get parent to name it [proto-declarative pointing])	▪ Uses three to five words ▪ Mature jargoning (with real words)	▪ Uses 5 to 10 words	▪ Uses 10 to 25 words ▪ Uses giant words (eg, "all gone," "stop that") ▪ Imitates environmental sounds (eg, animals) ▪ Names one picture on demand	▪ Holophrases ("Mommy?" and points at keys, meaning "These are mommy's keys") ▪ Two-word combinations ▪ Answers requests with "no"	▪ Uses 25 to 50 words ▪ Asks for more ▪ Adds one to two words per week	▪ Uses two-word sentences (noun + verb) ▪ Telegraphic speech ▪ 50+ words in vocabulary ▪ 50% intelligibility ▪ Refers to self by name ▪ Names three pictures

M-CHAT: Modified Checklist for Autism in Toddlers.

Graphic 75336 Version 11.0

Developmental milestones: 24 through 47 months

	Approximate chronologic age				
	24 months	**2 years, 4 months**	**2 years, 6 months**	**2 years, 9 months**	**3 years to 3 years, 6 months**
Gross motor	▪ Walks down stairs, holding rail, both feet on each step ▪ Kicks ball without demo ▪ Throws overhand	▪ Jumps from bottom step one foot leading ▪ Walks on toes after demo ▪ Walks backward 10 steps	▪ Goes up stairs, with rail, alternating feet ▪ Jumps in place ▪ Stands with both feet on balance beam ▪ Walks with one foot on balance beam	▪ Walks swinging arms opposite of legs (synchronous gait)	▪ Balances on one foot: Three seconds ▪ Goes up stairs, no rail, alternating feet ▪ Pedals tricycle ▪ Walks heel-toe ▪ Catches ball, arms stiff
Fine motor/writing	▪ Makes a single-line "train" of cubes ▪ Imitates circle ▪ Imitates horizontal line	▪ Strings large beads (awkwardly) ▪ Unscrews jar lids ▪ Turns paper pages (often several at once)	▪ Makes an eight-cube tower ▪ Makes a "train" of cubes and includes a stack	▪ Makes a 9- to 10-cube tower ▪ Puts six square pegs in pegboard ▪ Imitates cross	▪ Copies circle ▪ Cuts with scissors: Side to side (awkwardly) ▪ Imitates bridge of cubes ▪ Strings small beads well
Self-help	▪ Opens door using knob ▪ Sucks through straw ▪ Takes off clothes without buttons ▪ Pulls off pants	▪ Holds self and/or verbalizes toilet needs ▪ Pulls pants up with assistance	▪ Washes hands ▪ Puts things away ▪ Brushes teeth with assistance	▪ Toilet trained ▪ Puts on coat unassisted	▪ Eats independently ▪ Pours liquid ▪ Puts on shoes without laces ▪ Spreads with knife ▪ Unbuttons
Cognitive/academic	▪ Sorts objects ▪ Matches objects to pictures ▪ Shows use of familiar objects	▪ Matches shapes ▪ Matches colors	▪ Re-places circle in form board after it has been turned around (little or no trial and error) ▪ Points to small details in pictures	▪ Points to self in photos ▪ Points to body parts according to function (eg, "what do you hear with...?")	▪ Draws a two to three part person ▪ Understands big/small, more/less ▪ Knows own gender ▪ Knows own age ▪ Matches letters/numerals
Social/emotional	▪ Parallel play ▪ Begins to mask emotions for social etiquette	▪ Reduction in separation anxiety	▪ Imitates adult activities (eg, sweeping, talking on the phone, pretending to hunt animals)	▪ Begins to take turns ▪ Tries to help with household tasks	▪ Starts to share with/without prompt ▪ Fears imaginary things ▪ Imaginative play ▪ Uses words to describe what someone else is thinking (eg, "Mom thought I was asleep")
Receptive language	▪ Follows two-step commands ▪ Understands "me"/"you" ▪ Points to 5 to 10 pictures	▪ Understands "just one"	▪ Follows two prepositions (eg, "put block in...on box") ▪ Points to objects by use (eg, "ride in...," "put on feet...," "write with")	▪ Understands three prepositions ▪ Understands dirty/wet	▪ Points to parts of picture (eg, nose of cow, door of car) ▪ Understands action words (eg, playing, washing, blowing) ▪ Names body parts when function is described ▪ Understands negatives ▪ Groups objects (eg, food, toys) ▪ Understands long/short
Expressive language	▪ Uses two-word sentences (noun + verb) ▪ Telegraphic speech ▪ 50+ word vocabulary ▪ 50% intelligibility ▪ Refers to self by name ▪ Names three pictures	▪ Repeats two digits ▪ Begins to use pronouns (eg, I, me, you) ▪ Names 10 to 15 pictures	▪ Echolalia and jargoning gone ▪ Names objects by use ▪ Refers to self with correct pronoun ▪ Recites parts of well-known story/fills in words	▪ Gives first and last name ▪ Rote counts to three ▪ Begins to use past tense ▪ Enjoys being read to (short books)	▪ Uses 200+ words ▪ Three word sentences ▪ Uses pronouns correctly ▪ 75% intelligibility ▪ Uses plurals ▪ Names body parts by use ▪ Asks to be read to

Graphic 68086 Version 12.0

Developmental milestones: 4 years, 0 months through 7 to 8 years

	Approximate chronologic age			
	4 to 5 years	**5 to 6 years**	**6 to 7 years**	**7 to 8 years**
Gross motor	▪ Balances on one foot: Four to eight seconds ▪ Hops on one foot: Two to three times ▪ Standing broad jump: One to two feet ▪ Gallops ▪ Throws ball overhand: 10 feet ▪ Catches bounced ball	▪ Walks down stairs, alternating feet, without using rail ▪ Balances on one foot: More than eight seconds ▪ Hops on one foot: 15 feet ▪ Skips ▪ Running broad jump: Two to three feet ▪ Walks backward heel-toe ▪ Jumps backward	▪ Tandem walks ▪ Skips	▪ Rides bicycle independently ▪ Bats ball placed on cone ▪ Does somersaults
Fine motor/writing	▪ Copies square ▪ Imitates making a complex gate with cubes ▪ Ties single knot ▪ Cuts five inch circle ▪ Uses tongs to transfer ▪ Writes part of first name ▪ Works from left to right, top to bottom	▪ Copies triangle ▪ Builds stairs with cubes from model ▪ Puts paper clip on paper ▪ Can use clothespins to transfer small objects ▪ Cuts with scissors ▪ Writes first name	▪ Builds stairs with cubes from memory ▪ Draws diamond ▪ Copies flag ▪ Writes first and last name ▪ Creates and writes short stories ▪ Forms letters with down-going and counter-clockwise strokes	▪ Writing rate increases ▪ Stays on line when writing ▪ Spaces between words ▪ Size of letters becomes uniform ▪ Letter reversals disappear
Self-help	▪ Goes to toilet alone ▪ Wipes after BM ▪ Washes face/hands ▪ Brushes teeth alone ▪ Buttons ▪ Uses fork well	▪ Spreads with knife ▪ Independent dressing	▪ Ties shoes ▪ Combs hair ▪ Remembers to bring belongings	▪ Sticks with tasks (with television off) for up to 20 minutes ▪ Pays attention to teacher when in a group ▪ Completes homework on own ▪ Answers and delivers phone messages ▪ Completes household chores (with reminders)
Cognitive/academic	▪ Draws a four- to six-part person ▪ Can give amounts (usually less than five) correctly ▪ Completes simple analogies (eg, dad/boy:mother/___, ice/cold:fire/___, ceiling/up:floor/___) ▪ Points to five to six colors ▪ Points to letters/numerals when named ▪ Rote counts to four ▪ "Reads" several common signs/store names	▪ Draws an 8- to 10-part person ▪ Gives amounts (less than 10) ▪ Identifies coins ▪ Names letters/numerals out of order ▪ Rote counts to 10 ▪ Names 10 colors ▪ Uses letter names as sounds to invent spelling (eg, "N-D-N" for "Indian") ▪ By end of kindergarten: Knows sounds of consonants and short vowels ▪ Reads 25 words	▪ Draws a 12- to 14-part person ▪ Number concepts to 20 ▪ Simple addition/subtraction ▪ Understands seasons ▪ Sounds out regularly spelled words ▪ By end of first grade: Reads 250 words	▪ Knows sounds of consonant digraphs (eg, "ch," "sh") ▪ Knows sounds of vowel diphthongs (eg, "oo," "ou") ▪ Reads words with r-controlled vowels (eg, bird, burn) ▪ Starts "reading to learn" not just "learning to read" ▪ Two-place addition/subtraction ▪ Enjoys reading independently ▪ Remembers spelling words
Social/emotional	▪ Deception: Interested in tricking others and concerned about being tricked by others ▪ Has a preferred friend ▪ Labels happiness, sadness, fear, and anger in self ▪ Group play	▪ Has a group of friends ▪ Apologizes for mistakes ▪ Responds verbally to good fortune of others	▪ Has best friend of same sex ▪ Plays board games ▪ Distinguishes fantasy from reality ▪ Wants to be like friends and please them	▪ Avoids hurting others in play ▪ Learns from mistakes ▪ Helps younger children ▪ Strong notions about what is fair ▪ Takes turns in conversations ▪ Delays gratification and waits to take turn ▪ Interested in the opinions of peers
Receptive language	▪ Follows three-step commands ▪ Points to things that are the same versus different ▪ Names things when actions are described (eg, it swims in water, you cut with it, it is something you read, it tells time)	▪ Knows right and left on self ▪ Points to different one in a series ▪ Understands "er" endings (eg, batter, skater) ▪ Understands adjectives (eg, bushy, long, thin, pointed) ▪ Enjoys rhyming words and alliterations ▪ Produces words that rhyme ▪ Points correctly to "side," "middle," and "corner"	▪ Asks what unfamiliar words mean ▪ Can tell which words do not belong in a group	▪ Understands opposites and word analogies ▪ Knows right and left on others ▪ Understands days and months

Expressive language	▪ Repeats four- to six-syllable sentences ▪ Uses 300 to 1000 words ▪ Tells stories ▪ 100% intelligibility with few articulation errors ▪ Uses "feeling" words ▪ Uses words that tell about time	▪ Repeats six- to eight-syllable sentences ▪ Defines simple words ▪ 2000 word vocabulary ▪ Knows telephone number ▪ Responds to "why" questions ▪ Retells stories with clear beginning, middle, and end	▪ Repeats 8- to 10-word sentences ▪ Describes events in an orderly way ▪ Knows days of the week ▪ 10,000 word vocabulary	▪ Masters "r" sound in speech ▪ Tells time ▪ Uses complex and compound sentences ▪ Talks about a range of topics

BM: bowel movement.
* Refer to UpToDate content on fine motor milestones.

Graphic 60900 Version 11.0

Motor milestones for developmental surveillance at preventive care visits

Age*	Gross motor milestones	Fine motor milestones
2 months	▪ Lifts head and chest in prone	–
4 months	▪ Rolls over prone to supine ▪ Supports on elbows and wrists in prone	▪ Hands unfisted ▪ Plays with fingers in midline ▪ Grasps object
6 months	▪ Rolls over supine to prone ▪ Sits without support	▪ Reaches for cubes and transfers ▪ Rakes small object with four fingers
9 months	▪ Pulls to stand ▪ Comes to sit from lying ▪ Crawls	▪ Picks up small object with three fingers
12 months	▪ Walks independently ▪ Stands	▪ Puts one block in a cup ▪ Bangs two objects together ▪ Picks up small object with two-finger pincer grasp
15 months	▪ Walks backward ▪ Runs	▪ Scribbles in imitation ▪ Dumps small object from bottle, with demonstration
18 months	▪ Walks up steps with hand held	▪ Dumps small object from bottle spontaneously ▪ Builds tower of two cubes ▪ Scribbles spontaneously ▪ Puts 10 blocks in a cup
24 months	▪ Rides on toy without pedals ▪ Jumps up	▪ Builds tower and horizontal train with three blocks
30 months	▪ Begins to walk up steps alternating feet	▪ Imitates horizontal and vertical lines ▪ Builds a train with a chimney with four blocks
3 years	▪ Pedals; climbs on and off furniture	▪ Copies a circle drawing ▪ Draws a person with head and one other body part ▪ Builds a bridge with three blocks
4 years	▪ Climbs stairs without support ▪ Skips on one foot	▪ Draws a person with six parts ▪ Draws a simple cross ▪ Buttons medium-sized buttons

* The mean ages at which typically developing children will achieve motor milestones are listed. Marked delay beyond these ages warrants attention but does not necessarily signify a neuromotor disease.

Graphic 102836 Version 6.0

Screening for motor delays in infants and young children*

	The following motor skills should be observed in the young child at the specified visit. These skills are typically acquired at earlier ages, and their absence at these ages signifies delay. Loss of previously attained motor skills should also raise concern.
9-month visit	▪ Rolls to both sides ▪ Sits well without support ▪ Demonstrates motor symmetry without established handedness ▪ Grasps and transfers objects from hand to hand
18-month visit	▪ Sits, stands, and walks independently ▪ Grasps and manipulates small objects
30-month visit	▪ Evaluate for subtle gross motor, fine motor, speech, and oral motor impairments ▪ Evaluate for loss of previously attained gross or fine motor skills
48-month visit	▪ Evaluate coordination, fine motor, handwriting, gross motor, communication, and feeding abilities ▪ Address any preschool or child care staff concerns about motor development ▪ Evaluate for loss of previously attained gross or fine motor skills

* If screening reveals a neuromotor concern, the clinician should obtain an expanded history and perform a detailed neurologic examination. If abnormal tone is detected on physical examination, referral to early intervention and/or consultation with a pediatric neurologist may be warranted. Additional testing (eg, neuroimaging) may also be warranted. For additional information on the evaluation of children with abnormal motor development, refer to the UpToDate topic on evaluation and diagnosis of cerebral palsy.

Reference:

1. Noritz GH, Murphy NA, Neuromotor Screening Expert Panel. Motor delays: early identification and evaluation. Pediatrics 2013; 131:e2016.

Graphic 103006 Version 1.0

Psychometric properties of developmental-behavioral screening tests

Property	Definition[1]	Considerations for developmental-behavioral screening tests
Sensitivity	▪ Probability of test giving a positive result when the condition is present. (What percentage of children with developmental delay will be flagged by this test?)	▪ ≥70%[2] is generally accepted.
Specificity	▪ Probability of the test giving a negative result when the condition is not present. (What percentage of children without developmental delay will "pass" this test?)	▪ ≥70%[2] is generally accepted.
Positive predictive value (PPV)	▪ Probability of the condition being present in a positive test. (What percentage of children who are flagged by this test have the developmental delay for which it screens?)	▪ If the condition is serious and a follow-up test can distinguish true and false positives, then low PPV (meaning a high number of false positives) may be acceptable. ▪ PPV is higher if the condition is more common (eg, language delay versus cognitive delay). ▪ PPV and NPV are less useful in rare or low-prevalence conditions.[3]
Negative predictive value (NPV)	▪ Probability of the condition being absent in a negative test. (What percentage of children who "pass" this test do not have the developmental delay for which it screens?)	
Likelihood ratio (LR)	▪ Likelihood that a "flagged" test indicates the presence of the condition compared to its absence. (How much more likely is a "failed" screen to occur in a child with a developmental delay than without a delay?)	—
Concurrent validity	▪ Correlation of the test results to the "gold standard" or reference test results **at the same point in time**. (If this child has a comprehensive evaluation now, how will it correlate with the screening test?)	▪ Childhood development is dynamic. Concurrent validity fails to account for the expected trajectory; some mild delays resolve while others become more marked.
Predictive validity	▪ Correlation of the test results to the "gold standard" or reference test results given **at a later point in time**. (If this child has a comprehensive evaluation sometime in the future, how will it correlate with the screening test?)	▪ Predictive validity can be misleading. The screening test results may affect experiences before the "gold standard" evaluation. Developmental-behavioral evaluations sometimes occur months to years after a screening test, and various medical or psychosocial interventions may have occurred between the two time points.[2]

Data from:

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Graphic 116112 Version 1.0

Comparison of developmental screening tests commonly used in primary care

	Ages & Stages Questionnaire - 3rd Edition[1]	Communication and Symbolic Behavior Scales Infant Toddler Checklist[2,3]	Parents' Evaluation of Developmental Status[4]	Parents' Evaluation of Developmental Status - Developmental Milestones[4]	Survey of Well-Being of Young Children[5,6]
Considerations related to patient population					
Ages	▪ 1 to 66 months	▪ 6 to 24 months	▪ Birth to 7 years, 11 months	▪ Birth to 7 years, 11 months	▪ 1 to 66 months
Domain(s)	▪ Communication ▪ Gross motor ▪ Fine motor ▪ Problem-solving ▪ Personal-social	▪ Language: • Emotion and use of eye gaze • Use of communication • Use of gestures • Use of sounds • Use of words • Understanding of words • Use of objects	▪ Language ▪ Motor ▪ Self-help ▪ Early academic skills ▪ Behavior ▪ Social-emotional/mental health	▪ Fine motor ▪ Gross motor ▪ Expressive language ▪ Receptive language ▪ Self-help ▪ Social-emotional ▪ For older children: • Reading and math	▪ Developmental domain ▪ Emotional/behavioral domain ▪ Family context domain
Time to complete	▪ 10 to 15 minutes	▪ 5 to 10 minutes	▪ 5 minutes	▪ 5 minutes	▪ 10 minutes
Reading level	▪ Fourth to sixth grade level ▪ Some items illustrated	▪ 10- to 12-year-old level	▪ Fourth to fifth grade level	▪ Second to fourth grade level	▪ Sixth grade ▪ Can be read to parents with low literacy level
Available languages	▪ English ▪ Spanish ▪ French ▪ Hmong (online) ▪ Somali (online)	▪ English	▪ English ▪ Spanish ▪ Vietnamese ▪ Available for licensing in Somali, Hmong, Malaysian, Arabic, Chinese, Swahili, and many other languages	▪ English ▪ Spanish ▪ Also can license versions in Arabic, Chinese, Japanese, French (Canadian), Portuguese, and Thai	▪ English ▪ Spanish
Additional information	▪ Materials kit available to encourage child participation and support accurate administration	▪ For parents unable to read or write, questions may be presented by a provider in an interview format ▪ Four-page follow-up caregiver questionnaire also available ▪ Behavioral sample for child interaction with parent also available	▪ Effective regardless of parents' level of education, income, race, marital status, or child's age or birth order	▪ Includes an assessment level version for use in neonatal intensive care unit and early childhood intervention programs where more detailed test results and follow-along measurements are needed (offers age-equivalent and percentage of delay scores)	▪ Includes four components that assess developmental milestones, behavioral and emotional symptoms, risk for autism spectrum disorder, and family stress
Considerations related to practice characteristics					
Description	▪ 30 questions or activities – Six in each of the five domains	▪ 24 questions	▪ 10 questions	▪ 6 to 8 questions per encounter	▪ Approximately 40 items (varies with age)
Determination of positive/negative result	▪ "Cutoff" score –If below the cutoff level, referral recommended ▪ Above cutoff is "monitoring" zone ▪ Above monitoring zone indicates development appears appropriate	▪ Cutoff scores available by age – Concern versus no concern	▪ Five pathways based on predictive versus nonpredictive concerns and parents' ability to communicate	▪ Five pathways based on predictive versus nonpredictive concerns and parents' ability to communicate	▪ Each component is scored and considered separately
Validity and test performance	▪ Concurrent validity – 86% ▪ Sensitivity – 86% overall ▪ Specificity – 85% overall	▪ Sensitivity – 87.4% for language delays ▪ Specificity – 75.2% for language delays	▪ Sensitivity overall – 86% ▪ Specificity overall – 74%	▪ Sensitivity for each domain and age-level averaged = 83% ▪ Specificity for each domain and age-level averaged = 84%	▪ Properties vary for each component
Who can deliver	▪ Early education centers and preschools ▪ Early intervention programs ▪ Office staff	▪ Health care provider ▪ Child care service provider	▪ Professionals and paraprofessionals (brief training needed)	▪ Professionals and paraprofessionals (brief training needed)	▪ Health care providers ▪ Preschool teachers ▪ Nurses ▪ Child care providers ▪ Parents
Time to score and interpret	▪ 2 to 3 minutes	▪ 5 minutes	▪ 2 minutes	▪ 1 minute	▪ Total estimated time for parent completion and office scoring – 15

					minutes
Cost to purchase*	▪ Starter kit in one language – $275.00 (no additional fees as screeners can be photocopied) ▪ Materials kit – $295.00	▪ Checklist is free at: www.brookespublishing.com ▪ Complete kit available for $399.00	▪ PEDS Complete Set for First Timers – $42.00 (50 screens) ▪ PEDS response forms (pad of 50) – $19.50	▪ PEDS DM plus PEDS: The Best Approach for Pediatric and Public Health Encounters (pad of 100 response forms and score and interpretation forms) – $346.00	▪ Free online at: www.theswyc.org
Ease of integration into EMR	▪ Online data management and questionnaire completion system available for purchase	▪ Online scoring software available	▪ PEDS online: Automated scoring for purchase ▪ EMR integration available	▪ PEDS online: Automated scoring for purchase ▪ EMR integration available	▪ Electronic version may integrate into medical record

PEDS: Parents Evaluation of Developmental Status; PEDS DM: PEDS – Developmental Milestones; EMR: electronic medical record.
* Prices verified on October 25, 2017.

Data from:

1. *Ages & Stages Questionnaires, Third Edition (ASQ-3). Paul H Brookes Publishing Co, Inc 2017. Available at: agesandstages.com/products-services/asq3 (Accessed on November 18, 2017).*
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Graphic 116108 Version 1.0

Comparison of behavioral screening tests commonly used in primary care

	Ages & Stages - Social and Emotional, Second Edition[1]	Conners - 3[2]	Pediatric Symptom Checklist - 17[3,4]	Pediatric Symptom Checklist - 35[4-6]	Pediatric Symptom Checklist - Youth Report[4,7]	Strengths and Difficulties Questionnaire[8]
Considerations related to patient population						
Ages	▪ 1 to 72 months	▪ Parent and teacher questionnaires – 6 to 18 years ▪ Self-report – 8 to 18 years	▪ 6 to 18 years	▪ 3 to 5 years (with some questions removed) ▪ 6 to 18 years	▪ 11 to 18 years	▪ 3 to 16 years
Domains	▪ Self-regulation ▪ Compliance ▪ Social-communication ▪ Adaptive functioning ▪ Autonomy ▪ Affect ▪ Interactions with people	▪ Inattention ▪ Hyperactivity/impulsivity ▪ Learning problems ▪ Executive functioning ▪ Defiance/aggression ▪ Peer/family relations ▪ DSM-5 symptoms scales: • ADHD inattentive • ADHD hyperactive-impulsive • Conduct disorder • Oppositional defiant disorder	▪ Emotional and behavioral problems	▪ Emotional and behavioral problems	▪ Emotional and behavioral problems	▪ Emotional symptoms ▪ Conduct problems ▪ Hyperactivity/inattention ▪ Peer relationship problems ▪ Prosocial behavior
Time to complete	▪ 1 to 3 minutes	▪ 20 minutes	▪ 2 minutes	▪ Under 5 minutes	▪ 2 minutes	▪ 10 minutes
Reading level	▪ Fourth to sixth grade	▪ Parent and teacher – Fourth to fifth grade ▪ Self-report – Third grade	▪ Fifth to sixth	–	–	–
Available languages	▪ English ▪ Spanish	▪ English ▪ Spanish ▪ French	▪ Chinese ▪ English ▪ Spanish ▪ Vietnamese	▪ English ▪ Spanish ▪ Brazilian-American Portuguese ▪ Chinese ▪ Dutch ▪ European Portuguese ▪ Filipino ▪ French ▪ German ▪ Haitian-Creole ▪ Hebrew ▪ Hindi ▪ Hmong ▪ Italian ▪ Japanese ▪ Khmer ▪ Malayalam ▪ Nepali ▪ Setswana ▪ Somali	▪ English ▪ Spanish ▪ Haitian-Creole ▪ Setswana	▪ English
Additional information	▪ Can be used with ASQ3 for comprehensive developmental-behavioral screening	–	–	▪ Pictorial version with subtitles available in English, Spanish, and Filipino	▪ 17 question youth self-report in English and Spanish available, but has not been validated	–
Considerations related to practice characteristics						
Description	▪ Approximately 30 questions (varies with age)	▪ Full length – 99 to 115 items ▪ Short form – 41 to 45 items	▪ 17 items	▪ 35 items	▪ 35 items (self-report)	▪ 25 questions completed by parent, teacher, or self-report

		▪ ADHD index – 10 items				in 11- to 16-year olds
Determination of positive/negative result	▪ Three results: • No or low risk – Development appears appropriate • "Monitor" zone – Review concerns and monitor • "Cutoff" – Above the cutoff means referral recommended	▪ Provides T-scores*	▪ Total score of 15 or higher – Significant behavioral or emotional problems ▪ Internalizing subscale – Cutoff 5 or more items ▪ Attention subscale – Cutoff 7 or more items ▪ Externalizing subscale – Cutoff 7 or more items	▪ For children ages 6 to 18 years, cutoff score is 28. ▪ For children ages 3 to 5 years, the scores on elementary school related items 5, 6, 17, and 18 are ignored and a total score based on the 31 remaining items is computed. The cutoff score for younger children is 24.	▪ Cutoff score of 30 recommended	▪ Classification system: • Close to average • Slightly raised • High • Very high
Validity and test performance	▪ Concurrent validity – 84% ▪ Test-retest reliability – 89% ▪ Sensitivity – 81% overall ▪ Specificity – 83% overall	▪ Sensitivity and specificity vary based on predictor scale and target group (ADHD inattentive, combined, hyperactive-impulsive, learning disorder, disruptive behavior disorder)[2] ▪ Sensitivity range – 55 to 96% ▪ Specificity range – 22 to 91%	▪ Total PSC-17 scale: • Sensitivity – 82% • Specificity – 81%	▪ Cutoff score of 28: • Sensitivity – 95% • Specificity – 68%	▪ Cutoff score of 30: • Sensitivity – 94% • Specificity – 88%	▪ Sensitivity – 63% to 94% ▪ Specificity – 88% to 98%
Who can deliver	▪ Professionals ▪ Paraprofessionals ▪ Clerical staff	▪ Anyone can deliver ▪ Health care provider interprets results	▪ Anyone can deliver ▪ Health care provider interprets results	▪ Anyone can deliver ▪ Health care provider interprets results	▪ Self-administered ▪ Health care provider interprets results	▪ Self-administered
Time to score and interpret	▪ 1 to 3 minutes	▪ 20 minutes (administration and scoring time)	▪ 2 minutes	▪ 3 to 5 minutes	▪ 2 minutes	▪ 10 minutes (total administration and scoring)
Cost to purchase¶	▪ Starter kit in one language – $275	▪ Online Software Kits start at $759 ▪ Manual Scoring Kits start at $249	▪ Free from: • Massachusetts General Hospital • Brightfutures.org	▪ Free from: • Massachusetts General Hospital • Brightfutures.org	▪ Free from: • Massachusetts General Hospital • Brightfutures.org	▪ Free (with permission) at www.sdqinfo.org
Ease of integration into EMR	▪ Online management and questionnaire completion options	▪ Online software available	▪ Manual/paper version	▪ Manual/paper version	▪ Manual/paper version	▪ Online scoring and report generation available

DSM-5: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; ADHD: attention deficit hyperactivity disorder; ASQ3: Ages & Stages Questionnaire - Third Edition; EMR: electronic medical record.
* T-scores indicate how the patient's scores compare to the scores of others. Fifty represents the mean and one standard deviation is equal to 10 (a T-score of 40 is one standard deviation below the mean; a T-score of 60 is one standard deviation above the mean).
¶ Prices verified on October 25, 2017.

Data from:

1. *Ages & Stages Questionnaires: Social-Emotional, Second Edition (ASQ:SE-2). Paul H Brookes Publishing Co, Inc 2017. Available at: agesandstages.com/products-services/asqse-2 (Accessed on November 18, 2017).*
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Adapted from: American Academy of Pediatrics. Addressing mental health concerns in primary care: A clinician's toolkit. Available at: https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Mental-Health/Documents/MH_ScreeningChart.pdf (Accessed on November 27, 2017).

Graphic 116107 Version 1.0

Pros and cons of less commonly used developmental screening tests

Screening test	Pros	Cons
Bayley Infant Neurodevelopmental Screener[1-3]	▪ Cognitive, language, and motor domains ▪ Training sessions available ▪ Observational checklist that can save administration time ▪ Screening test kit – $241.50* ▪ Sensitivity: 75 to 86% ▪ Specificity: 75 to 86%	▪ Limited age range (1 to 24 months) ▪ Screening test performed on child – 15 to 25 minutes to administer ▪ No electronic scoring system ▪ Only available in English
Brigance[3-5]	▪ Multiple ages covered: • Early childhood screen III (0 to 35 months) • Early childhood screen III (3 to 5 years) • K & 1 screen III (5 and 6 years) ▪ Administered and scored in 10 to 15 minutes ▪ Covers academics and preacademics, communication, motor, self-help, and social-emotional domains ▪ Can be used in early childhood programs, pediatric clinics, or screening fairs ▪ Can be administered by teachers, paraprofessionals, special educators, psychologists, occupational and physical therapists, child care and early childhood teachers, and speech-language pathologists ▪ Can be scored by hand or online software can be purchased ▪ Sensitivity total for all ages – 91% ▪ Specificity total for all ages – 86%	▪ Only available in English ▪ Need to buy three kits to cover age ranges – Cost* for: • 0 to 35 months – $309 • 3 to 5 years – $279 • 5 to 6 years – $279
Capute Scales[1,6] (Cognitive Adaptive Test/Clinical Linguistic Auditory Milestone Scale [CAT/CLAMS])	▪ Measures visual motor, problem solving, and expressive and receptive language ▪ English, Spanish, and Russian versions available ▪ Screener for general practitioners and an assessment tool for specialists such as developmental pediatricians, speech-language pathologists, and occupational therapists ▪ Capute Complete System – $380.00* ▪ Specificity: 95 to 100% in low-risk populations and 82 to 98% in high-risk populations	▪ Directly administered tool – 15 to 20 minutes to administer ▪ Limited age range (3 to 36 months) ▪ Sensitivity: 21 to 67% in low-risk populations and 5 to 88% in high-risk populations
Child Development Inventory[1,7]	▪ Measures social, self-help, motor, language, and general development skills ▪ Results in developmental quotients and age equivalents for different developmental domains ▪ Sensitivity: 80 to 100% ▪ Specificity: 94 to 96% ▪ English and Spanish	▪ 300 items ▪ 30 to 50 minutes to administer
Child Development Review - Parent Questionnaire[1,8]	▪ Five developmental areas: Social, self-help, gross motor skills, fine motor skills, and language ▪ Professional may use this chart as an observation guide **or** as a parent interview guide ▪ English and Spanish ▪ Six open-ended questions and a 26-item possible-problems checklist to be completed by the parent, followed by 99 items crossing the five domains, which may be used as an observation guide or parent-interview guide ▪ Specificity: 88%	▪ 18 months to 5 years ▪ 10 to 20 minutes to administer ▪ Sensitivity: 68%
Developmental Assessment of Young Children - Second Edition[3,9]	▪ Birth through 5 years, 11 months ▪ Identifies cognitive, communicative, social-emotional, physical, or adaptive behavior abilities delay ▪ Skills may be assessed through observation, interview of caregivers, and/or direct assessment ▪ Online scoring and report option	▪ Testing time: 10 to 20 minutes for each domain ▪ 380 items total ▪ Only available in English
Early Language Milestone Scale (ELM Scale-2)[1,10]	▪ Assesses speech and language development (auditory expressive, auditory receptive, and visual domains) ▪ Can be used with older children with developmental delays whose functional level falls within this range ▪ 43 items ▪ 1 and 10 minutes to administer ▪ Pass/fail scoring ▪ Sensitivity: 83 to 100% ▪ Specificity: 68 to 100%	▪ English only ▪ Birth to 36 months only

Early Motor Pattern Profile (EMPP)[1]	▪ Examination of movement, tone, and reflex development ▪ Three-point scoring system ▪ 5 to 10 minutes to administer; 15 items ▪ Sensitivity: 87 to 92% ▪ Specificity: 98%	▪ Physician-administered ▪ 6 to 12 months only ▪ English only
Early Screening Profiles[3,11]	▪ Screens five developmental domains: Cognitive, language, motor, self-help, and social development ▪ Four surveys available: Articulation survey, home survey, health history survey, and behavior survey ▪ Age range: 2 years, 0 months to 6 years, 11 months ▪ Parent and teacher questionnaires available and can be completed in 10 to 15 minutes	▪ 15 to 40 minutes to complete ▪ Manual scoring only
Infant Development Inventory[1,3,12]	▪ Parent completed questionnaire ▪ 5 to 10 minutes to administer and 5 minutes to score ▪ Five areas of development: Social, self-help, gross motor, fine motor, and language ▪ Risk categorization – Delayed or not delayed ▪ Training video available online ▪ Available in Spanish and English ▪ Sensitivity: 87% ▪ Specificity: 77%	▪ Only children from birth to 18 months ▪ No electronic version
Learning Accomplishment Profile-Diagnostic (LAP-D) Screens[3,13]	▪ Broad screener of gross motor, fine motor, cognitive, and language ▪ Three-year-old version: 18 items ▪ Five-year-old version: 25 items ▪ Can be used in variety of settings: Early childhood programs, universities, research laboratories, hospitals, rehabilitation centers, and other medical practices ▪ Available in English and Spanish ▪ Training on administration available	▪ Only children 3 to 5 years (30 to 72 months) ▪ Four-year-old version: 55 items ▪ Necessary to have a professional background to administer and score the LAP-D screens: • Teachers can administer the LAP-D screens, but they must have at least a Child Development Associate (CDA) credential • Screens can be administered by clinical psychologists, school psychologists, occupational and physical therapists, physicians, nurses, and social workers
Motor Quotient (MQ)[1]	▪ Uses simple ratio quotient with gross motor milestones for detecting delay ▪ 11 total milestones - One per visit ▪ One to three minutes to administer ▪ Sensitivity: 87% ▪ Specificity: 89%	▪ Age range: 8 to 18 months ▪ English only

* Prices verified on November 27, 2017.

Date from:

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Graphic 116109 Version 1.0

Developmental-behavioral screening test feasibility checklist

	Considerations for practice	Notes for your practice
Time to complete	▪ May use waiting time productively ▪ Consider sending home before visit	
Time to score and interpret	▪ More than two minutes is usually not realistic	
Self-completed versus office staff survey	▪ For flexibility, choose a test valid in either delivery ▪ Some caregivers are more forthcoming with perceived confidentiality	
Who can deliver	▪ Some tests can be delivered and scored by nonclinician, but all require interpretation by a clinician	
Cost to purchase	▪ Copyright law applies: Some tools are not in the public domain (and prohibit photocopying) ▪ Consider purchasing in bulk	
Electronic medical record integration	▪ Both automated scoring and free text should be available	
Language available	▪ Most tools are in Spanish and English; some are translated into multiple languages ▪ Few are validated in languages other than English, but translations are generally recommended; interpret with caution, but preferable to disregarding non-English speakers	
Literacy level	▪ Consider clinician or staff support for caregivers with limited literacy	
Reimbursement	▪ Varies by insurer, Medicaid*	

* Additional information about Medicaid reimbursement is available from the National Academy for State Health Policy.

Graphic 116110 Version 1.0

Developmental-behavioral screening and information resources for clinicians and caregivers

Resources for clinicians
American Academy of Pediatrics ▪ Policy statement Identifying infants and young children with developmental disorders in the medical home: An algorithm for developmental surveillance and screening ▪ Screening technical assistance and resource (STAR) center Provides links to validated developmental and behavioral screening tests ▪ Bright Futures Provides information or links to developmental, behavioral, and psychosocial screening and assessment forms for review and reference ▪ Don't just wait and see: Improving developmental screening and follow-up quality improvement project Provides instruction on how to implement a MOC Part 4 QI project on developmental surveillance, screening, and referral ▪ Council on Children with Disabilities Early Intervention Provides information about Early Intervention, including links to a referral form template and contact information for the Part C/Early Intervention Program in each state ▪ Section on Developmental and Behavioral Pediatrics Provides links to tools and resources for clinicians
National Task Force for Early Identification of Childhood Neuromuscular Disorders ▪ ChildMuscleWeakness.org Details the steps to identify neuromuscular disease in children
United States Department of Health and Human Services ▪ Birth to 5: Watch me thrive! A compendium of screening measure for young children
Zero to three ▪ Provides information and resources to support infants and toddlers in reaching their full potential
Resources for parents/caregivers
American Academy of Pediatrics ▪ Provides information about physical developmental delays
Centers for Disease Control and Prevention ▪ Developmental milestones Lists of age-appropriate developmental milestones with pictures and videos ▪ National Center on Birth Defects and Developmental Disabilities Provides information about specific conditions

MOC: maintenance of certification; QI: quality improvement.

Graphic 116111 Version 3.0

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