

## PedsCases Podcast Scripts

This is a text version of a podcast from PedsCases.com on "Developmental Assessment." These podcasts are designed to give medical students an overview of key topics in pediatrics. The audio versions are accessible on iTunes or at [www.peds-cases.com/podcasts](http://www.peds-cases.com/podcasts).

### **Developmental Assessment:**

Developed by Peter Gill and Dr. Debbi Andrews for PedsCases.com.  
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#### Introduction:

Evaluating a child's development is a crucial component of pediatric care. The objectives of this podcast are to outline a practical approach to assessing kids in in-patient and out-patient settings.

In this podcast, we will review the concepts of developmental surveillance, screening and assessment; discuss what is meant by developmental sectors and milestones; go over how to take a developmental history and become skilled at child observation; review the effect of in-patient versus outpatient setting; and touch on the issue of regression.

#### Background:

Remember, development and behavior concerns are common. At least 30% of physician visits by parents with young children will include concerns about development, behaviour, or both! Attention Deficit Hyperactivity Disorder (ADHD), Learning Disabilities (LD), and language delays are all more prevalent in kids than diabetes and congenital heart disease and without a doubt will be encountered in practice.

#### Developmental Surveillance, Screening and Assessment

Well, what are the differences between developmental surveillance, screening and assessment?

*Surveillance* occurs when developmental attainment is reviewed and recorded with all well-child visits. Formal *screening* using standardized tools is often done for children with a high chance of developmental disability, such as those with known medical conditions, a family history of developmental disorders or any social risk, eg, poverty. Concerns elicited by surveillance or abnormal developmental screening scores should be referred for further evaluation. It's better to refer if you are not sure than to falsely reassure the parent that the child will "grow out of it" because developmental interventions work best if started early.

Developmental *assessment*, on the other hand, is detailed standardized testing in various developmental sectors done by a physician and/or allied health disciplines. It is often performed by a *multi-disciplinary team* that may include a developmental

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paediatrician, speech language pathologist, occupational therapist, physiotherapist, psychologist, audiologist and teacher. The result of the assessment is a definitive description of specific developmental levels, often given as age equivalents, and formulation of an intervention plan.

### A Few Words About Milestones

*Milestones* are key developmental attainments that occur at predictable points in a time sequence. They are only one tool for assessing development and should not be viewed in isolation. It is important to look at skills that happen before and after a given milestone in the same sector to understand the longitudinal process. You should also look at skills in other developmental sectors expected to occur at the same chronological age to understand how skills in one sector can affect skills in another. Delays in developmental skills may occur across all sectors ("global delay"), but for many developmental disorders some sectors are more affected than others.

There are a few important caveats about milestones. Milestones are most accurate when they are *current, written down* and *important to caregivers*. For example, parents may not remember when their child stood on one foot for 3 seconds, but they will remember when the child first walked! Asking parents to bring in the child's baby book is often helpful. Details of early milestones are less important when subsequent ones have been attained.

### Developmental Sectors

Milestones are divided into 5 major categories or "sectors". These are *gross motor, fine motor, speech/language, cognitive* and *social-emotional* development.

**Gross motor** movements involve the large postural muscles of the trunk and limb girdles and the muscles that move the extremities. Skills in this sector are involved in maintaining body position (or "posture"), changing body position, and getting from one place to another (or "ambulation"). Gross motor skills are affected by strength, tone, and balance. We use gross motor skills for employment in jobs requiring physical labor, and for enjoyment and fitness, eg, in sports.

**Fine motor** skills, on the other hand, consist of dexterous movements of small muscles, usually those of the hands. We use our hands to perform "activities of daily living" (ADLs) such as dressing, eating, grooming and toileting. We also use many tools for work, communication and recreation-from toys to pencils and computers, from musical instruments to scalpels and stethoscopes. Our ability to skillfully manipulate all sorts of objects often determines our occupation and hobbies.

**Speech** is an oral-motor act that we complete with our mouths, tongues, lips and teeth, while language is the communicative content. The accuracy of oral speech affects how we are understood by others, i.e. our "*intelligibility*." How we pronounce words is called *articulation*. Articulation improves with age, so that by school entry there are few sounds a child cannot make accurately. *Abnormal fluency*, that is, speech that lacks the normal smoothness, as is seen in stuttering, can also affect intelligibility. Language skills may be divided into *receptive language--what we understand*, and *expressive language--what we are able to communicate*.

Language is affected by and affects our thought processes, or cognition, as well as our social interaction. Language usually involves oral speech but it doesn't need to-sign language, pictograms and written words are examples of language that does not involve speaking.

**Cognition**, also called intellectual ability, refers to the mental functions we use for thinking, perceiving, remembering, learning, analyzing, and synthesizing. It involves using the mind to solve problems, come to decisions, form ideas, and make opinions. In infants and young children, cognitive ability may be inferred from the way they play with objects and explore their world. Once children reach school age, cognition generally correlates with academic learning skills like reading and math.

**Social-emotional** development has two major components. The first component is the development of self, including of temperament or personality style, and the regulation of emotions, for example, the ability to calm down after being angry or upset. The second major component of social-emotional development is *relations with others*. Infants first form an attachment to a primary caregiver, and gradually expand their social network to include other family members. This is followed by other adults, especially teachers, then same-age peers, then the broader community. Poor social skills and failure to form lasting relationships can affect work success and mental health in later life.

#### Approach to History Taking:

Students often dread developmental assessment. They wonder, "How do I approach the history? Where do I even start? How do I remember all those milestones to ask? There is so much variation in each age group!" Developmental assessment can certainly seem overwhelming at first; however, with a few simple suggestions, it can go smoothly.

It is good to start with an open-ended question, for example, "Do you have any concerns about your child's development?" Afterwards you can ask specific questions about skills in each of the five sectors. Ask key milestones which should have been previously attained, such as, "When did your child say his first word?" as well as what the child is currently doing, eg, "Give me some examples of things your child is saying now."

Remember, if a child has obviously attained a later milestone, you don't have to ask everything that came before! A few earlier milestones to ensure the overall process looks normal will be sufficient.

Don't make life too hard on yourself. Start with learning a few key ages as you see children in your clinical work. Good ages to start with are the *newborn*, *4 month old*, *1 year old*, *2 year old* and *5 year old*. Refer to a history-taking framework, eg the Rourke Baby Record, to help learn what to ask at what age. Carry it around with you and refer to it often-you will soon have a full repertoire of developmental history questions!

#### Caveats about out-patients

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It is best to assess development during well visits, *not* when the child is sick. Developmental screening questionnaires like the *Parents' Evaluation of Developmental Status (PEDS)* or the *Ages and Stages Questionnaire (ASQ)* are easy to score and can be used to elicit parent concerns in a busy office without taking a lot of time. Give parents the questionnaires to fill out at home or while they wait. Parents are generally good observers of their own children, and their report measures are valid and reliable.

Observation is essential. Try to use naturalistic observation to supplement your history. For example, observe when the child is walking into the room, or sitting in a stroller or on the parent's lap, or climbing onto a chair or exam table. Observe the child as she gets undressed for examination, and while eating and drinking snacks. Try and have a conversation with the child during exam and determine her ability to follow directions, to give personal information or to tell you a story. How intelligible is speech? Also assess the child's social interactions with the caregiver, with you, and with other children and adults.

Observing will save you time, verify parent reports, and minimize the number of questions you need to ask about development. Make sure you write down your observations in the chart. A few words about each of the five sectors will suffice.

An excellent way to get developmental information is to observe play with age-appropriate toys. First things first-make sure the toys are clean and safe, with no small parts that might cause choking! Older kids can be asked to draw a picture and write their name on it. Remember, kids may not show you their best skills if they can remember bad experiences in the doctor's office! Try to make exams comfortable and fun.

#### Caveats about in-patients:

When kids are in hospital and are sick, they are often stressed and frightened. They may regress in behavior and development. Pain, weakness, lack of sleep and medications can interfere with demonstrating skills. Parents may also be stressed and focused on emergencies and their child's condition so they may not be as good at remembering the details of development and could even perceive questions about development as trivial or unimportant compared to questions about the present illness. If so, make a note to come back to this when the child is feeling better.

All in all, hospitalization is not a good time to do developmental assessment, although it may be an appropriate time to elicit parent concerns about development to explore later.

#### Important things to ask- Baby

Although we don't recommend memorizing long lists of milestones, it does help to learn a few of them to get you started. Which are the most important ones to learn first? This depends on the child's age. For a *baby or toddler*, here are some key things to ask:

In the *gross motor* sector, ask about or observe *head control*, and the ability to *roll, sit, stand, and walk*.

For *fine motor* skills, observe how the child *grasps* and *transfers* objects and *uses utensils* like a spoon.

In the area of *speech and language*, how does the infant make sounds? *Cooing* means making melodic vowels sounds, and comes before *babbling*, which involves repetitive consonant-vowel combinations. This is the familiar "mamama" and "dadada" stage. Babble sounds don't count as a true "first word" until the baby says them with specific meaning. *Jargon* is a stage where the child sounds like he is making sentences but it is not intelligible to parents, who often say it sounds like the baby is talking in a different language! Jargon may include some actual words. About age two, children produce *combos* of two words that they have previously used separately, like "my juice" or "Daddy go." Longer *phrases* follow. Also note *gestures*, *articulation* and *intelligibility*.

For *cognition*, how does the child understand *cause and effect* and *remember* people, places, and things? What is the quality of *play*?

In the *social-emotional* sector, ask about *self-soothing* behaviors, *social smile*, and *attachment* to caregiver, *pointing* to show things to others, and *shared attention*.

#### Important Things to Ask- Older Child

When assessing older children, here a few key things to ask about:

In the *gross motor* sector, ask about *sports* and recreational activities that most kids in your community would do, eg, *bike riding*, *swimming*, *skating*, and *gym class*.

For *fine motor* skills, observe *current ADLs* such as dressing and undressing, grooming, and using eating utensils. How well do they print with a *pencil* and use a *computer*?

In the area of *speech and language*, what is the *length of their sentences*, *use of grammar*, and *social appropriateness* of language? Can they tell you a *story*? Again note *accuracy of sound production* and *intelligibility*.

For *cognition*, how is the child doing with *problem solving* and learning *academics*?

In the *social-emotional* sector, ask how the child gets along with *family*, *teachers*, and *peers*. Does the child have *friends*?

As you see more and more children, you will expand in your knowledge of the best questions to ask at each age and have a better appreciation of what's normal and what's not.

#### Regression

Developmental *regression* occurs when a child starts losing previously attained skills. It is *not* just slowing down in development-true regression requires that the child now can't do something he could do before. It is the paediatric equivalent of dementia. Here is where good developmental surveillance pays off, as you can check back and look at your old chart notes. *Regression is almost always medical and needs to be worked up!* The differential diagnosis is extensive and ranges from metabolic disorders, epilepsy,

autism, trauma, toxic exposures, Post Traumatic Stress Disorder (PTSD), and infections such as encephalitis and meningitis.

Take home points:

This concludes our podcast. Here are the take-home points:

- Remember, development surveillance, screening and assessment are very important parts of child health.
- Ask questions about a child's development in each of the five sectors at every well visit! Take parent concerns seriously, because they are generally accurate reporters of their child's skills!
- Don't try to memorize all the milestones! If necessary, refer to a history-taking framework or a milestone chart.
- Don't forget to use your skills of observation! In this way many developmental conditions can be picked up at a stage in which early intervention can be most effective. As a child health provider, you can have a significant positive impact on the child's development.
- Besides, playing with and talking to kids is fun! Enjoy learning about development and assessing kids!

References:

References available upon request.