

Anatomy of a Pediatric Clinical Visit

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Hello. My name is Nancy Hutton. And during this session I'd like to talk with you about the anatomy of the pediatric clinical visit.

The objectives for this session are first to talk about how we engage effectively when we work with children and their families in clinical encounters.

And then to talk about the key components of the pediatric visit, including components of the history, the physical examination, how we assess the patient overall, and our plan for follow up.

When we first meet the patient, it's best to observe the situation. Is the child with a parent or another adult? We should smile. We should introduce ourselves. And notice, is the parent or the other adult anxious? Do they seem worried or fearful in some way?

How is the child behaving? Do they seem happy and calm, or are they fearful in some way? This gives us a clue about the best ways for us to approach our initial interactions with the patient and the family, in order to build the best rapport for our ongoing relationship.

It's good to begin our history taking with the easiest questions, ones that are not emotionally heavy or difficult, or very complicated. That helps us get the process going in a smooth fashion.

When we begin our physical examination, it's helpful if we begin first with things that may be seen as fun or enjoyable, involving observation of developmental milestones. For instance, asking children to stand up or jump or run for us.

It's important always, for both children and their parents, for us to explain what it is we're going to do before we do it. Children are much better able to cooperate with our examination if they know what to expect.

Let's turn first to taking the history of the child. In pediatrics, it's always important to get a complete and accurate, as accurate as possible, history of the child's birth. So we ask about the child's birth weight. If we know whether the child was born prematurely or at the expected time of delivery.

What was the mode of delivery? Was the child delivered by spontaneous vaginal delivery? Or was Caesarean surgical delivery required?

What is the mother's health status? And for this session, often the mother will be HIV positive. And if so, do we know what her HIV disease status is? And whether she has used any antiretroviral or ART medications.

She might be on ART for treatment of her own HIV disease, or she may have received ART specifically for prevention of mother to child transmission, or PMTCT. In either case, it's important for us to know which medications she was taking during her pregnancy, and when she was taking them.

We also are interested in whether the infant received any ART. Again, infants may receive ART because they were receiving the infant portion of a PMTCT regimen. Or, if the infant or child is known to be HIV infected, they may have already received some antiretroviral treatment in the past.

Another part of the birth history is to determine whether there were any other neonatal complications. Was the child ill at the time of delivery, or require significant intervention: resuscitation, antibiotics, that sort of thing, at the time of birth.

We can move on to the developmental history. And this is grouped into four main domains of information. Gross motor milestones, such as a child's ability to sit unsupported, to stand, to walk, to run. Fine motor milestones, which involve the ability to use the hands and fingers for more complicated tasks: manipulating toys, self-feeding, those sorts of things. And then the language areas, both receptive language: how well a child understands what is said to them, or questions or requests that are made to them as well as their expressive language abilities: their ability to tell us what they need, what their questions are, or how they answer our questions. There also is an area that is called problem solving, that meshes the other domains together, but helps us to assess how well a child's thinking capabilities are. Do they understand? Can they process information? Are they able to come to a solution or a conclusion on their own in an age-appropriate way?

The past medical history includes asking about traditional illnesses, such as infections: pneumonia, tuberculosis, a history of ear infections, particularly chronic ear drainage. Recurrent fevers, particularly if there is no known cause for the fever. Diarrhea that is chronic or recurrent. These all will be helpful as we look towards determining a child's HIV status or classification during a future session.

We also want to know, has a child been sick enough to require hospitalization? And what the cause for that was. Any medications the child is taking now or has needed in the past and the child's immunization status.

At our initial visit, we want to know about the family history. We can ask this by asking who are the family members? Who is living at this time? And what their current health status is.

We're interested both in the HIV status of family members, as well as any other chronic medical conditions, or conditions that might help predict possible problems that our child patient could encounter now or in the future.

We also want to know who in the family has died, because this helps us to know what kinds of infections or medical conditions may be in the family. But it also will help us with our social history, in terms of who remains in the family who cares for children.

So it's important, as we ask our family history, to ask about the child's parents, the child's grandparents, and about any siblings. It's also important to ask, if there are siblings, and we know that a parent is HIV positive, have those siblings been tested for HIV? Again, we'll discuss this in another session.

In the social history, we explore more about the child's family, although I think of it sometimes as who lives in the household with the child, because it may or may not be someone who is a blood family relative.

We want to know who a child's guardian is. Certainly in this era of AIDS and early adult death, we have many children who are orphaned. So knowing who is the responsible adult is an important part of a pediatric social history.

We want to know where the child lives. Where is that setting like? And in particular, do they have a safe and clean water supply? Do they have adequate food supply?

For older children, we want to know whether they attend school? Do they have access to school? Or are there barriers related to financial constraints, such as lack of school fees or money for uniforms or school supplies?

As we begin our physical examination, it's again important to emphasize that our approach to the child can be either helpful or make it more difficult to do an appropriate physical exam.

Children who are young and who are frightened, either because the physician is a stranger to them or because they have had situations in the past that were frightening or painful during an examination or during a phlebotomy, for instance, that child may become agitated or crying or may physically resist examination.

That makes it very difficult to do the kind of careful assessment that we need to do as physicians in order to have a proper assessment.

So if we begin with observation and with the elements of the exam that are least frightening, and certainly elements that are not painful, we'll be most successful in enlisting a child's help with our exam.

Often the first part of the exam is actually measuring how large the child is. So knowing a child's weight, accurately measured on a scale, and doing that in a routine way.

In our clinic, we ask that children have their shoes removed, for instance, but they can wear light clothing. We try to weigh them with the same amount of clothing at each visit so that we don't see variations in weight simply because of the clothing that the child is wearing.

Measuring the length of the child for infants and young children, or the standing height of an older child, again doing this as carefully as possible, because minor changes in the stature of the child, or a child squirming on a table to be measured, can give us errors in our measurements.

We use our weight and our length or height measurements both for us to monitor how well a child is growing, which is an important part of their health assessment. But we also use them to help us know doses of medication that we will be prescribing, and to help us know when to change doses of medication. So the accuracy of these measures can't be overemphasized.

Head circumference is also an important part of the growth parameters we monitor, because growth in this area helps us to know that the child's brain development is progressing appropriately, or signals when it is not.

Other vital signs, such as the respiratory rate and the heart rate are important initial screening observations for those systems. Blood pressure measurement, when available, is also important for children over the age of three years.

Further observation before touching the child include watching the pattern of the child's breathing. In particular, we're looking for signs of respiratory distress, such as indrawing of the respiratory muscles or retractions, such as retractions above the clavicles or in the intercostal areas or subcostal areas.

We also look for nasal flaring, so the flaring of the nose with each in breath, which suggests difficulty breathing. This is helpful in a young child who can't articulate a sense of shortness of breath. And another pattern that's helpful, particularly in infants and very young children, is grunting. A sound on the out breath that indicates respiratory distress as well.

In young babies, when I've heard it, it sounds like this: [sound]

So they take in a breath, and then they pause in the out breath and then give a short vocalization. This is an effort on the part of the baby to actually maintain positive end expiratory pressure in the airways and help maintain aeration of the lungs.

We also observe the child's motor activity. In a young infant who is laying on an exam table, are they moving all their extremities? Is their movement symmetric and vigorous? In an older child, can they walk? Do they walk with a limp or do they walk symmetrically?

Those are the examples of observation. Again, we're gathering all this information before we even have touched the child.

We can look at the child's skin color. Look for pallor. Look for cyanosis. Look for perfusion. Is the child mottled? Does the child have a cool skin temperature?

We can also look at the child's interaction with others. Does the child make good eye contact? Are they talking, verbalizing? Do they smile? Do they respond to others? Or do they have a flat affect, which might raise concerns about their brain function or concerns about their emotional health.

As we move onto components of the physical exam, examining the mouth carefully, again, with the child's cooperation, makes it most easy to accomplish. We are interested in evidence of infection, such as ulceration in the mouth. White patches on the buccal mucosa or palate or gingiva that are consistent with oral candidiasis. Dental caries or infections of the gum or gingival areas.

We want a good exam of the ears. That's an area that's prone to infection in young children, but also an area of chronic infection in children with immunodeficiency.

In assessing the neck, we pay particular attention to swelling of the lymph nodes and of the salivary glands, particularly the parotid glands, may typically be chronically enlarged in children with HIV.

And we examine the scalp, again for evidence of infection, a fungal infection or a bacterial infection.

When we examine the chest, we are looking and listening to the lung function. We want to assess that aeration is symmetric, that there is air entry adequately into all lobes of the lungs. And we also listen to evidence of crackles, inspiratory crackles or rattles that suggest consolidation in the alveolar spaces.

We listen for wheezes, which may be expiratory whistling sounds, or may occur on inspiration as well, that suggest bronchoconstriction, and areas of dullness, which may indicate pleural effusion or significant consolidation or atelectasis.

We listen to the heart. We listen for the rate to determine whether there's tachycardia. We listen to the rhythm. Is it a regular rhythm or is it irregular? And we listen for extra heart sounds, S3 or S4. In addition, we listen for any heart murmurs. Certainly, children with or without HIV may have evidence of congenital heart defects, and this exam will help to detect those. In addition, children who have anemia or who may have cardiac disease related to HIV may also have abnormalities in their cardiac exam.

Before we move on from the chest exam, remember to examine the axillary areas carefully for prominent lymph nodes. This is also important in children for whom

there is a concern about HIV infection.

For the abdominal exam, we first observe the contour. Is the abdomen scaphoid or is it distended? Are there bowel sounds? Again, scoping with the stethoscope for bowel sounds before touching the abdomen is the preferred order of exam. When we do touch, is the abdomen soft or is it hard? In particular, if it's firm, is it also very tender? This would suggest peritoneal irritation and significant or serious infection. We then move on to determine if there is any palpable mass on abdominal exam, and we look in particular for any enlargement in the spleen or in the liver, which we may also see in HIV as well as other infections in children. In the inguinal area, we palpate for enlarged lymph nodes.

It's important to examine the genitalia to notice first whether there any genital anomalies, but then to be sure that there is normal development of the genitalia. We also examine to be sure there aren't infections that need to be evaluated or treated further.

The musculoskeletal exam obviously involves the whole body, but we look there in particular for any skeletal deformities or joint deformities. We also look for mobility of the joints. Is there any pain or tenderness or limitation of joint mobility? We also test the child's strength, which gives us an indication both of potential muscle disease but also of the child's neurological status.

Children should be strong in a symmetric way. They often like to show us how strong they are. This can be an enjoyable part of the exam for many children.

We check their deep tendon reflexes with a reflex hammer because some children will have hyperactive reflexes when they have CNS involvement due to their HIV. We also look for symmetry because again, focal findings are important screens for us to use to think further about possible CNS infections, as an example.

At each point we should be reviewing skin for skin infections and skin integrity. These are other clues to internal conditions.

Once we've completed the gathering of all of this information by talking with children and families and by examining the child's body, we have to bring that all together in an overall assessment of the child at this visit. So plotting the growth parameters on a growth chart, particularly a growth chart that we can use at future visits, is important. It's important to know whether the child is at this time plotting below the fifth percentile and therefore failing to thrive, or is the child in a normal range for age and growth?

We also determine whether the child's developmental abilities as we've learned about them are appropriate for the child's age, or is this child having developmental delays? Again, this is a clue to HIV disease as well as important in thinking about the interventions and supports we might plan for the child in the future.

Does the child have HIV? Again, we'll talk more about this in other sessions. But assessing a child's HIV status will be an important part of the conclusion of a visit.

And then, we will want to determine a problem list. Are there other problems the child might have, like infections such as an ear infection, or organ system problems such as a heart murmur that needs further evaluation? We are making a list of the problems or concerns so that we can then make a plan to address those.

We also should assess a child's social support system. Are there family supports where they're living? Are they attending school? That sort of thing.

Then we make a plan. If we've identified problems and we have treatments to offer, then we make plans for how to offer those treatments, such as medications or prescriptions. Is a child in need of additional nutritional support, perhaps because they are failing to thrive? If a child is HIV exposed or HIV infected, do they need PCP prophylaxis? Again, we'll discuss this in more detail in a future session. Is antiretroviral therapy indicated? Again we'll discuss this in a future session. But these would all be important key components of the plan. Are referrals needed for home or community based support, again potentially for nutritional or educational support?

Then, there is always planning for a next visit. Is this child going to come back to you for ongoing care, or have you performed a consultation and the child is going back to a community health care site? In either case, there should always be a plan for who is going to see the child at the next visit, where that will be, and how far in the future that will be.

At follow-up visits, we follow the same pattern of a visit, but the history does not need to be quite so detailed. We can focus on the interval history, things that have changed or new things that have occurred since our last visit. We always monitor growth so that we can continue to plot our growth curve. We always monitor development for new milestones, or especially for any loss of milestones. That would be a particularly alarming finding. And again that will be discussed in greater detail at a future session.

Then there is always performing the basic physical exam elements to determine if there are new problems, or whether old problems have resolved. And we want to have a way to track patterns for all of these over time, so that we can see whether things are getting better or worse over time with our interventions.

So in summary, our initial pediatric visit involves a complete history and a complete physical examination. Our follow-up visits can focus on changes that have happened since the last visit. But it's important to have a plan for tracking patterns over time of important health status issues for children, such as their growth, their development, and any chronic or recurrent problems that they

have.

Finally, it's important to build a trusting relationship with children and families. This will help us do our job in the best way we can, but it also facilitates the ever-important adherence that we need to support in children and families for their HIV care and their HIV treatment. Thank you.