

# Paediatric Neurology Series

All adult neurologists come across “paediatric” problems in their clinical practice – giving an opinion on an adolescent with MS, assessing a family with a mitochondrial disorder, or caring for the increasing number of young adult survivors of severe neurological disease in childhood. Often teenagers are just booked straight into an adult clinic, and although the pathology may be familiar, the clinical approach may not.

This is the first article in a new series on paediatric neurology. We make no apology for beginning with the basics – history, examination and child development and will move on to consider specific conditions such as epilepsy, headache, stroke and regression later on.

Our aim is to provide practical guidance and information on common paediatric neurological conditions which will be useful in your daily practice. – *Anna Maw, series editor.*



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## Paediatric Neurology – History and Examination

For those not on familiar territory, paediatric neurology presents a double challenge – not only are children very different from adults, but their neurology is different too. The applicability of the classical neurological approach is limited as children tend to be affected by diffuse rather than focal pathology. Aetiology is also different with a high proportion of inherited and congenital conditions. Working with young children requires a significant shift of mindset with the clinical emphasis on observation rather than structured examination. Making sense of clinical findings in the under 5’s is all but impossible without a working knowledge of child development and patterns of delay.

In this article we will look at the consultation, history and examination of children and young people and highlight points of particular importance in paediatric practice that differ from those in adults.

**The Paediatric consultation**

Children are, almost invariably, presented to the doctor by another person. As such, they often join the consultation in a passive role and are at an immediate disadvantage. They may not even know why they are there. Even adolescents and teenagers can be excluded and talked over and it requires a conscious effort on the part of the doctor throughout the consultation to establish a rapport and keep the child involved.

Getting children to talk can be difficult. The child needs to feel safe and secure in the consultation environment and to know that you are genuinely interested in him, his condition and what he has to say.

**Setting the scene**

Organise the physical environment so that the child is sitting next to you. You can then put questions and comments directly to him and observe him easily. Smaller children may well remain totally silent but this does not mean that your words are lost on them.

Start by introducing yourself directly to the child and the rest of the family. Work out who everyone is at the start to save embarrassment – mother, aunt, grandmother, father, stepfather (sometimes both), social worker and the community nurse will often attend. Remember to acknowledge siblings and ask their names and ages.

Clinic Letters are routinely copied to families. Check surnames and ask about other recipients (father may live at another address and parents may not be on speaking terms).

Take a moment to acknowledge the strain and worry which carers bring to a paediatric consultation. Anxiety can make people morose, aggressive, tearful and confused. Reassure everyone that they will get the opportunity to air concerns and ask questions.

**Get the child involved**

- Sit the child next to you
- Introduce yourself directly to the child
- Show concern and interest
- Address questions gently but directly
- Actively facilitate the child’s involvement
- Check back with the child “is what your mum is saying right?”
- Acknowledge explicitly that some questions will be addressed directly to the parent

**Choose your words carefully**

- Avoid stigmatising terms
- Consider “**other** children of this age” rather than “**normal** children of this age”
- Use “young people” rather than “children” in the over 12s
- Use “you” rather than “he”
- Small children listen carefully even when they seem to be playing.
- Remember - Doctors’ words are powerful and may resonate for years

### Taking the history

The difference between taking a history in paediatrics and adult practice is largely one of emphasis. Information from the antenatal, neonatal and developmental history can be especially important in putting the presenting complaint into context. A new onset of seizure disorder, for example, may have quite different diagnostic implications if it comes on a background of previously normal development compared to a child with global developmental delay or recent onset of school failure.

The degree to which a child can provide the history himself will depend on age, developmental stage and social confidence. Children as young as 3 can often describe symptoms quite clearly but are unlikely to volunteer information unless they are asked.

### Older children

The majority of adolescents and teenagers are willing and able to give most of the history themselves. Young people will often give a very candid account of the nature of their illness, its impact on functioning and the situation at school and home. However, if you do not make a conscious effort to include them, many will remain silent throughout. This is bad for everyone – he will grow to resent being ignored, and you may miss vital clues to the diagnosis.

### Younger children

Younger children of primary school age should also be included from the beginning “why don’t you tell me something about your headaches? Where do they hurt?” Many children will defer immediately to their parents, but they will appreciate that you asked them and may well be more likely to volunteer information at a later date.

In reality, the majority of the history in this age group is likely to be provided by the carer with occasional contributions from the child. While the parent is talking, take time to check back with child – “is what your mum is telling me right? Do you think there is anything she has missed out? What else do you think I need to know?”

Bear in mind that young children are very suggestible and will be desperate to get the answer “right”. It is even more important than usual to avoid leading questions.

### Toddlers and babies

While you are taking the history from the adult, watch and listen to the child. This could be the best chance you have to assess development. This is also the child’s chance to weigh you up and decide whether or not to co-operate with the examination later.

### Social, family and school history

Aim to get a good all round grasp of the child’s social, family and academic functioning. Specific points are listed in the boxes to the right. Most children should have a few friends they can name and something they like to do outside school. School failure is a common

presentation in paediatrics and should be taken as a significant problem.

### Developmental history

A brief review of major developmental milestones is important – smiling, sitting, crawling, walking, talking, feeding and self-care.

The next two articles in this series are devoted to child development and its assessment and will give guidance on what information to seek and how to use it.

#### Antenatal history

- Maternal health during pregnancy
- Complications
- Intercurrent illnesses
- Scan results
- Previous pregnancies and outcomes
- Same biological father as siblings?

#### Birth history

- Gestation
- Mode of delivery (why?)
- Birth weight (centile)
- Duration of labour and complications

#### Neonatal history

- Any special care
- Feeding problems
- Mode of feeding
- Initial growth
- Vitamin K

#### Social history

- Age and occupation of parents
- Who else lives in the home?
- Recent family events – divorce, redundancy, moving house
- Friends in and out of school
- Leisure activities
- Benefits, disability living allowance
- Support network

#### School history

- Mainstream or special school?
- Year of school
- School progress
- School happiness
- Special needs or statement of SN
- Bullying
- Recent school move

#### Family history

- Siblings, parents and cousins
- Exclude consanguinity
- Ask about developmental problems, seizures, early death, recurrent miscarriage, learning problems and motor delay.

### Neurological examination of children

#### Mobile children over 5

Children with a developmental age over 5 should be able to co-operate with a structured neurological examination, as you would use in adult practice. Instructions should be clear and short and accompanied by lots of praise and encouragement. Most children will be keen to co-operate but their ability to do so may well be reduced by anxiety and a fear of failure. Often children like to have the task demonstrated for them (“try to walk like me, as if you’re on a tightrope”).

#### Mobile children under 5

Clinical examination of this group is done largely by observation and stealth. Make the most of every opportunity to observe the child – particularly on the walk from the waiting room and while you are taking the history from the parent.

- **Listen** for language and conversation skills (many small children are electively mute around doctors), interaction with adults and evidence of imaginative play
- **Watch** for normal visual behaviour, fine motor skills – pincer grip, midline transfer, manipulation of small toys, Gross motor skills – gait, strength, symmetry of movements, running, bending, crouching, coordination
- **Play** with the child and encourage him to walk on a tightrope and turn round quickly, perform Gower’s manoeuvre, walk on his heels, run, hop and jump up from the ground.

#### Cranial nerves

Observe visual behaviour, watch for fixing and following and eye movements. Test visual fields with a toy. Get a carer to stand behind you and distract the child while you have a quick look in the fundi.

- Watch facial movements
- Speak quietly with your hand covering your mouth to see if the child responds appropriately
- Ask about excessive dribbling or observe the child drinking
- Ask the child to stick his tongue out and shrug his shoulders

#### Neuromuscular examination

If you suspect a peripheral disorder, then proceed to a modified neuromuscular examination.

- Remove the child’s clothing as far as he is willing
- Observe gait, muscle bulk, symmetry, posture and joint positions
- Look specifically for lordosis, scoliosis, hip flexion, ankle inversion or eversion
- Examine tone, joint ranges and power using lots of encouragement.
- Put your thumb over the tendon when testing reflexes.

#### Immobile children with a developmental age under 5

Be particularly careful with such children who may be easily distressed. Once a nine-month-old baby is crying and is frightened of you, it is

extremely hard to retrieve the situation!

Do not move the child unnecessarily – if he is happy in the pushchair, leave him there as long as possible.

#### Observe and note

- Developmental level
- Vision and hearing
- Any vocalisation
- Orthoses
- Obvious dysmorphism

#### Cranial nerves

Fixing and following – on a large toy, small toy and bright light.

- Look for symmetry of eye movement and pupillary reaction to light
- Response to sound
- Response to voice and smile
- Ask about swallow and feeding

#### Neuromuscular examination

- Watch for best motor function – antigravity movements of all 4 limbs, rolling, sitting and pulling to stand
- Pull to sitting and watch for head lag – low tone, reduced power
- If head control is good can he sit with or without support?
- Pick him up under the armpits – does he slip through your hands (hypotonia)?
- Gently manipulate joints to assess tone

#### Essentials for all children

- Lots of cajoling
- Look at the spine
- Neurocutaneous stigmata
- Head circumference and weight – are they on the same centile?
- Mood and engagement
- fundi

#### Conclusion

Every medical consultation has its own challenges. Consulting with children and families can present specific difficulties depending on the age of the child, the family context and the condition concerned. Older children and teenagers require a sustained effort on the part of the doctor throughout the consultation to enable them to give the most useful history and co-operate well with the examination. Younger children need a more flexible approach to examination which is based in close observation, opportunism and a good grasp of child development. As you watch a 4 year old patient running down the corridor away from your room yelling at the top of his voice, try not to think “where did I go wrong?” but rather “Hmm...symmetrical gait, bilateral heel strike, good visual acuity, age appropriate language, not evidently dysarthric....” ♦

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The full application pack for this post is available electronically and can be downloaded from our website: [www.addenbrookes.org.uk](http://www.addenbrookes.org.uk)

Alternatively this can be forwarded to you by email by sending a request to [medical.staffing@addenbrookes.nhs.uk](mailto:medical.staffing@addenbrookes.nhs.uk) Please include the words Consultant in Paediatric Neurology 180CON0257 in the subject title of your email.

A hard copy of the application pack can be requested by post or fax from: Medical Staffing Department (Box 154), Level 3, Addenbrooke's Hospital, Hills Road, Cambridge CB2 0QQ. Fax 01223 586968.

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