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2-Я КАФЕДРА ДЕТСКИХ БОЛЕЗНЕЙ

1-Я КАФЕДРА ДЕТСКИХ БОЛЕЗНЕЙ

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# **ИСТОРИЯ БОЛЕЗНИ РЕБЕНКА**

## **PEDIATRIC HISTORY**

Учебно-методическое пособие

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## **PEDIATRIC HISTORY**

The cornerstone of clinical practice continues to be history-taking and clinical examination. Good doctors will continue to be admired for their ability to distil the important information from the history, for their clinical skills, for their attitude towards patients and for their knowledge of diseases, disorders and behavior problems.

Parents are acutely interested in and anxious about their children. They will quickly recognize doctors who demonstrate interest, empathy and concern. They will seek out doctors who possess the appropriate skills and attitudes towards their children.

In approaching clinical history and examination of children, it is helpful to visualize some common clinical scenarios in which children are seen by doctors:

- An acute illness, e.g. respiratory tract infection, meningitis, appendicitis
- A chronic problem, e.g. failure to thrive, chronic cough
- A newborn infant with a congenital malformation or abnormality, e.g. developmental dysplasia of the hip, Down syndrome
- Suspected delay in development, e.g. slow to walk, talk or acquire skills
- Behavior problems, e.g. temper tantrums, hyperactivity, eating disorders.

The aims and objectives are to:

- establish the relevant facts of the history; this is always the most fruitful source of diagnostic information
- elicit all relevant clinical findings
- collate the findings from the history and examination
- formulate a working diagnosis or differential diagnosis on the basis of logical deduction
- assemble a problem list and management plan.

The above can be summarized by the acronym HELP:

- H =history
- E =examination

- L =logical deduction
- P =plan of management.

Key points in pediatric history and examination are:

- the child's age – a key feature in the history and examination as it determines:
- the nature and presentation of illnesses, developmental or behavior problems
- the way in which the history-taking and examination are conducted
- the way in which any subsequent management is organized
- the parents, who are astute observers of their children. Never ignore or dismiss what they say.

### **Introduction**

- Make sure you have read any referral letter and scanned the notes *before* the start of the interview.
- Observe the child at play in the waiting area and observe their appearance, behavior and gait as they come into the clinic room. The continued observation of the child during the whole interview may provide important clues to the diagnosis and management.
- When you welcome the child, parents and siblings, check that you know the child's first name and gender. Ask how the child prefers to be addressed.
- Introduce yourself.
- Determine the relationship of the adults to the child.
- Establish eye contact and rapport with the family. Infants and some toddlers are most secure in parents' arms or laps. Young children may need some time to get to know you.
- Ensure that the interview environment is as welcoming and unthreatening as possible. Avoid having desks or beds between you and the family, but keep a comfortable distance.
- Have toys available. Observe how the child separates, plays and interacts with any siblings present.
- Do not forget to address questions to the child, when appropriate.

- There will be occasions when the parents will not want the child present or when the child should be seen alone. This is usually to avoid embarrassing older children or teenagers or to impart sensitive information. This must be handled tactfully, often by negotiating to talk separately to each in turn.

### **Presenting symptoms (complaints)**

Full details are required of the presenting symptoms. Let the parents and child recount the presenting complaints in their own words and at their own pace. Note the parent's words about the presenting complaint: onset, duration, previous episodes, what relieves/aggravates them, time course of the problem, if getting worse and any associated symptoms. Has the child's or the family's lifestyle been affected? What has the family done about it?

**Pain** – if pain is a symptom, clarify the details of the pain using *SOCRATES*

**Site** – where exactly is the pain / where is the pain worst?

**Onset** – when did it start? / did it come on suddenly or gradually?

**Character** – what does it feel like? (sharp stabbing / dull ache / burning?)

**Radiation** – does the pain move anywhere else? (e.g. chest pain with left arm radiation)

**Associations** – any other symptoms associated with the pain (e.g. chest pain with shortness of breath)

**Time course** – does the pain have a pattern (e.g. worse in the mornings)?

**Exacerbating / Relieving factors** – anything make it particularly worse or better?

**Severity** – on a scale of 0-10, with 0 being no pain & 10 being the worst pain you've ever felt

Make sure you know:

- What prompted referral to a doctor
- What the parents think or fear is the matter.

The history and examination should be goal-oriented, based on the presenting complaint. The scope and detail of further history-taking are determined by the nature and severity of the presenting complaint and the child's age. While the comprehensive assessment listed here is sometimes required, usually a selective approach is more appropriate. This is not an excuse for a short, slipshod history, but instead allows one to focus on the areas where a thorough, detailed history is required.

### **General enquiry**

Check:

- General health – how active and lively?
- Normal growth
- Pubertal development (if appropriate)
- Feeding/drinking/appetite
- Any recent change in behavior or personality.

### **Systems review**

Selected, as appropriate:

- General rashes, fever (if measured)
- Respiratory – cough, wheeze, breathing problems
- ENT – throat infections, snoring, noisy breathing (stridor)
- Cardiovascular – heart murmur, cyanosis, exercise tolerance
- Gastrointestinal – vomiting, diarrhea/constipation, abdominal pain
- Genitourinary – dysuria, frequency, wetting, toilet-trained
- Neurological – seizures, headaches, abnormal movements
- Musculoskeletal – disturbance of gait, limb pain or swelling, other functional abnormalities.

Make sure that you and the parent or child mean the same thing when describing a problem.

## **An approach to examining children**

### **Obtaining the child's cooperation**

- Make friends with the child.
- Be confident but gentle.
- Avoid dominating the child.
- Short mock examinations, e.g. auscultating a teddy or the mother's hand, may allay a young child's fears.
- When first examining a young child, start at a non-threatening area, such as a hand or knee.
- Explain what you are about to do and what you want the child to do, in language he can understand. As the examination is essential, not optional, it is best not to ask his permission, as it may well be refused!
- A smiling, talking doctor appears less threatening, but this should not be overdone as it can interfere with one's relationship with the parents.
- Leave unpleasant procedures until last.

### **Adapting to the child's age**

Adapt the examination to suit the child's age. While it may be difficult to examine some toddlers and young children fully, it is usually possible with resourcefulness and imagination on the doctor's part.

- Babies in the first few months are best examined on an examination couch with a parent next to them.
- A toddler is best initially examined on his mother's lap or occasionally over a parent's shoulder.
- Distracting a toddler with a toy allows auscultation of the heart. Parents are reassuring for the child and helpful in facilitating the examination if guided as to what to do.
- Preschool children may initially be examined while they are playing.

- Older children and teenagers are often concerned about privacy. Teenage girls should normally be examined in the presence of their mother, or a nurse or suitable chaperone. Be aware of cultural sensitivities in different ethnic groups.
- A quiet condition of the child is preferred. It is not necessary to awake the sleeping child suddenly. Please keep in mind: while sleeping, the parameters of some systems are optimal.

### **Undressing children**

Be sensitive to children's modesty. The area to be examined must be inspected fully but this is best done in stages, re-dressing the child when each stage has been completed. It is easiest and kindest to ask the child or parent to do the undressing.

### **Warm, clean hands**

Hands must be washed before (and after) examining a child. Warm smile, warm hands and a warm stethoscope all help.

### **Developmental skills**

A good overview of developmental skills can be obtained by watching the child play. A few simple toys, such as some bricks, a car, doll, ball, pencil and paper, pegboard, miniature toys and a picture book, are all that is required, as they can be adapted for any age. If developmental assessment is the focus of the examination, it is advisable to assess this before the physical examination, as cooperation may then be lost.

## **Examination**

### **Initial observations**

Careful observation is usually the key to success in examining children. Look before touching the child. Inspection will provide information on:

- severity of illness
- growth and nutrition
- behavior and social responsiveness
- level of hygiene and care.

### **Severity of illness**



Is the child sick or well? If sick, how sick? For the acutely ill infant or child, perform the '60-second rapid assessment':

- Airway and Breathing – respiration rate and effort, presence of stridor or wheeze, cyanosis
- Circulation – heart rate, pulse volume, peripheral temperature, capillary refill time
- Disability – level of consciousness.

### *Measurements*

As abnormal growth may be the first manifestation of illness in children, always measure and plot growth on centile charts for:

- weight, noting previous measurements from personal child health record
- length (in infants, if indicated) or height in older children
- head circumference (HC) in infants.
- Measurements of length, weight and HC between the 25th and 75th percentiles are likely to represent normal growth.
- Measurements between the 10th and 25th percentiles represent less than average data and between the 75th and 90th – bigger than average data. These measurements may or may not be normal, depending on previous and subsequent measurements and on genetic and environmental factors.
- Measurements between the 10th and 3rd, and the 90th and 97th percentiles belong to low and high data, which require further examination.
- Measurements below the 3rd and above the 97th percentiles are extremely low and extremely high and reflect pathological deviations of physical development (appendix 1).

Also, as appropriate:

- temperature
- blood pressure
- peak expiratory flow rate.

### **General appearance**

The face, head, neck and hands are examined. The general morphological appearance may suggest a chromosomal or dysmorphic syndrome. In infants, palpate the fontanelle and sutures.

## **Respiratory system**

### ***Cyanosis***

Central cyanosis is best observed on the tongue.

### ***Clubbing of the fingers and/or toes***

Clubbing is usually associated with chronic suppurative lung disease, e.g. cystic fibrosis, or cyanotic congenital heart disease. It is occasionally seen in inflammatory bowel disease or cirrhosis.

*Rate of respiration* is age-dependent (appendix 2).

***Tachypnea*** (age - breaths/minute)

< 2 months - >60

2 to 12 months - >50

12 month to 5 years - >40

Greater than 5 years - >30

### ***Dyspnea***

Labored breathing. Increased respiratory rate (may be the only sign of increased work of breathing).

Increased work of breathing is judged by:

- nasal flaring
- expiratory grunting – to increase positive end-expiratory pressure
- use of accessory muscles, especially sternomastoids
- retraction (recession) of the chest wall, from use of suprasternal, intercostal and subcostal muscles
- difficulty speaking (or feeding).

### ***Chest shape***

- Hyperexpansion or barrel shape, e.g. asthma
- *Pectus excavatum* (hollow chest) or *pectus carinatum* (pigeon chest)

- Harrison's sulcus (indrawing of the chest wall from diaphragmatic tug), e.g. from poorly controlled asthma
- Asymmetry of chest movements.

### ***Palpation***

- Chest expansion: this is 3–5 cm in school-aged children. Measure maximal chest expansion with a tape measure. Check for symmetry.
- Trachea: checking that it is central is seldom helpful and is disliked by children. To be done selectively.
- Location of apex beat to detect mediastinal shift.

### ***Percussion***

- Needs to be done gently, comparing like with like, using middle fingers.
- Seldom informative in infants.
- Localized dullness: collapse, consolidation, fluid.

### ***Auscultation (ears and stethoscope)***

- Note quality and symmetry of breath sounds and any added sounds
- Harsh breath sounds from the upper airways are readily transmitted to the upper chest in infants
- Hoarse voice – abnormality of the vocal cords
- Stridor – harsh, low-pitched, mainly inspiratory sound from upper airways obstruction
- Breath sounds – normal are vesicular; bronchial breathing is higher-pitched and the length of inspiration and expiration is equal
- Wheeze – high-pitched, expiratory sound from distal airway obstruction.
- Crackles – discontinuous 'moist' sounds from the opening of bronchioles.

## **Cardiovascular system**

### ***Cyanosis***

Observe the tongue for central cyanosis.

### ***Clubbing of fingers or toes***

Check if present.

### ***Pulse***

Check:

- Rate (appendix 3,4)
- Rhythm – sinus arrhythmia (variation of pulse rate with respiration) is normal
- Volume – small in circulatory insufficiency or aortic stenosis; increased in high-output states (stress, anemia); collapsing in patent ductus arteriosus, aortic regurgitation.

### ***Inspection***

Look for:

- respiratory distress
- precordial bulge – caused by cardiac enlargement
- ventricular impulse – visible if the patient is thin, hyperdynamic circulation or left ventricular hypertrophy is present.
- operative scars – mostly sternotomy or left lateral thoracotomy.

### ***Palpation***

Thrill = palpable murmur.

Apex (4th–5th intercostal space, mid-clavicular line):

- not palpable in some normal infants, plump children or dextrocardia
- heave from left ventricular hypertrophy.

Right ventricular heave at lower left sternal edge – right ventricular hypertrophy.

### ***Percussion***

Cardiac border percussion in children is Table 1.

Table 1

**Borders of relative heart dullness and transversal heart distance**

<b>Border</b>	<b>Age of child</b>			
	<b>Under 2 years</b>	<b>2-7years</b>	<b>7-12 years</b>	<b>Over 12 years</b>
<b>Right</b>	The right parasternal line	Inwards from the right	In the middle between the right	

		parasternal line	parasternal line and the right sternal line	
<b>Upper</b>	the 3 <sup>rd</sup> rib	the 2 <sup>nd</sup> intercostal space	the 3 <sup>rd</sup> rib	the 3 <sup>rd</sup> rib or 3 <sup>rd</sup> intercostal space
<b>Left</b>	2 cm outwards from the left mid-clavicular line	1 cm outwards from the left mid-clavicular line	0.5 cm outwards from the left mid-clavicular line	On the left mid-clavicular line or 0.5 cm inwards
<b>Transversal heart distance</b>	6-9 cm	8-12 cm	9-14 cm	9-14 cm

### *Auscultation*

Listen for heart sounds and murmurs.

### *Heart sounds*

- Splitting of second sound is usually easily heard and is normal.
- Fixed splitting of second heart sound in atrial septal defects.
- Third heart sound in mitral area is normal in young children.

### *Murmurs*

- Timing – systolic/diastolic/continuous
- Duration – mid-systolic (ejection)/pansystolic
- Loudness – systolic murmurs graded:

1–2: soft, difficult to hear

3: easily audible, no thrill

4–6: loud with thrill

- Site of maximal intensity – mitral/pulmonary/aortic/tricuspid areas
- Radiation:

to the neck in aortic stenosis

to the back in coarctation of the aorta or pulmonary stenosis.

### ***Hepatomegaly***

Important sign of heart failure in infants. An infant's liver is normally palpable 1–2 cm below the costal margin.

### ***Femoral pulses***

In coarctation of the aorta:

- Decreased volume or may be impalpable in infants
- Brachiofemoral delay in older children.

### ***Blood pressure***

Heart disease is more common in children with other congenital abnormalities or syndromes, e.g. Down and Turner syndromes.

*Features of heart failure in infants:*

- Poor feeding/failure to thrive
- Sweating
- Tachypnea
- Tachycardia
- Gallop rhythm
- Cardiomegaly
- Hepatomegaly.

*Features suggesting that a murmur is significant:*

- Conducted all over the precordium
- Loud
- Thrill (equals grade 4–6 murmur)
- Any diastolic murmur
- Accompanied by other abnormal cardiac signs.

### **Abdomen**

Abdominal examination is performed in three major clinical settings:

- The routine part of the examination
- An 'acute abdomen' – cause
- Recurrent abdominal pain/distension/constipation mass.

### *Associated signs*

Examine:

- The eyes for signs of jaundice and anemia
- The tongue for coating and central cyanosis
- The fingers for clubbing.

### ***Inspection***

The abdomen is protuberant in normal toddlers and young children. The abdominal wall muscles must be relaxed for palpation.

Generalized abdominal distension is most often explained by the five 'F's:

- Fat
- Fluid (ascites – uncommon in children, most often from nephrotic syndrome)
- Faeces (constipation)
- Flatus (malabsorption, intestinal obstruction)
- Fetus (not to be forgotten after puberty).

Occasionally, it is caused by a grossly enlarged liver and/or spleen or muscle hypotonia.

Causes of localized abdominal distension are:

- Upper abdomen – gastric dilatation from pyloric stenosis, hepato/splenomegaly
- Lower abdomen – distended bladder, masses.
- Other signs:
  - Dilated veins in liver disease, abdominal striae
  - Operative scars (draw a diagram)
  - Peristalsis – from pyloric stenosis, intestinal obstruction.

Are the buttocks normally rounded, or wasted as in malabsorption, e.g. celiac disease or malnutrition?

### ***Palpation***

- Use warm hands, explain, relax the child and keep the parent close at hand. First ask if it hurts.
- Palpate in a systematic fashion – liver, spleen, kidneys, bladder, through four abdominal quadrants.

- Ask about tenderness. Watch the child’s face for grimacing as you palpate. A young child may become more cooperative if you palpate first with their hand or by putting your hand on top of theirs.

***Tenderness***

- *Location* – localized in appendicitis, hepatitis, pyelonephritis; generalized in mesenteric adenitis, peritonitis
- *Guarding* – often unimpressive on direct palpation in children. Pain on coughing, on moving about/walking/bumps during car journey suggests peritoneal irritation. Back bent on walking may be from psoas inflammation in appendicitis. By incorporating play into examination, more subtle guarding can be elicited. For example, a child will not be able to jump on the spot if they have localized guarding.

***Liver***

- Palpate from right iliac fossa
- Locate edge with tips or side of finger
- Edge may be soft or firm
- Unable to get above it
- Moves with respiration
- Measure (in cm) extension below costal margin in mid-clavicular line. Liver borders (table 2).

Table 2

**Liver borders**

<b>Lines</b>	<b>1-3 years</b>	<b>4-7 years</b>	<b>8-12 years</b>	<b>Over 12 years</b>
The right mid-clavicular line	5 cm	6 cm	8 cm	10 cm
The medium line	4 cm	5 cm	7 cm	9 cm
The left oblique line	3 cm	4 cm	6 cm	8 cm

Percuss downwards from the right lung to exclude pseudohepatomegaly due to lung hyperinflation. Liver tenderness is likely to be due to inflammation from hepatitis. Cause of hepatomegaly (table 3).



Table 3

**Cause of hepatomegaly**

<b>Infection</b>	Congenital infection, mononucleosis, hepatitis, malaria, parasitic infection
<b>Hematological</b>	Sickle cell anemia, thalassemia
<b>Liver disease</b>	Chronic active hepatitis, portal hypertension, polycystic disease
<b>Malignancy</b>	Leukemia, lymphoma, neuroblastoma, Wilms' tumor, hepatoblastoma
<b>Metabolic</b>	Glycogen and lipid storage disorders, mucopolysaccharidoses
<b>Cardiovascular</b>	Heart failure
<b>Apparent</b>	Chest hyperexpansion from bronchiolitis or asthma

***Spleen***

- Palpate from left iliac fossa
- Edge is usually soft
- Unable to get above it
- Notch occasionally palpable if markedly enlarged
- Moves on respiration (ask the child to take a deep breath)
- Measure size below costal margin (in cm) in mid-clavicular line.
- If uncertain whether it is palpable:
- Use bimanual approach to spleen
- Turn child onto right side.

A palpable spleen is at least twice its normal size! Lung hyperexpansion in bronchiolitis or asthma may displace the liver and spleen downwards, mimicking hepato/splenomegaly. Cause of splenomegaly (table 4).

Table 4

**Cause of splenomegaly**

<b>Infection</b>	Viral, bacterial, protozoal (malaria, leishmaniasis), parasites, infective endocarditis
<b>Hematological</b>	Haemolytic anemia
<b>Malignancy</b>	Leukaemia, lymphoma
<b>Other</b>	Portal hypertension, systemic juvenile idiopathic arthritis (Still's disease)

***On examining the abdomen:***

- Inspect first, palpate later
- Superficial palpation first, deep palpation later
- Guarding is unimpressive in children
- Silent abdomen – serious!
- Immobile abdomen – serious!

**Kidneys**

These are not usually palpable beyond the neonatal period unless enlarged or the abdominal muscles are hypotonic.

On examination:

- Palpate by ballotting bimanually
- They move on respiration
- One can get above them.

Tenderness implies inflammation.

***Abnormal masses***

- *Wilms' tumour* – renal mass, sometimes visible, does not cross midline
- *Neuroblastoma* – irregular firm mass, may cross midline; the child is usually very unwell
- *Faecal masses* – mobile, non-tender, indentable
- *Intussusception* – acutely unwell, mass may be palpable, most often in right upper quadrant.

***Percussion***

- *Liver* – dullness delineates upper and lower border

- *Spleen* – dullness delineates lower border
- *Ascites* – shifting dullness. Percuss from most resonant spot to most dull spot.

### ***Auscultation***

Not very useful in ‘routine’ examination, but important in ‘acute abdomen’:

- Increased bowel sounds – intestinal obstruction, acute diarrhea
- Reduced or absent bowel sounds – paralytic ileus, peritonitis.

### **Genital area**

The genital area is examined routinely in young children, but in older children and teenagers this is done only if relevant, e.g. vaginal discharge. Is there an inguinal hernia or a perineal rash?

In *males*:

- Is the penis of normal size?
- Is the scrotum well developed?
- Are the testes palpable? With one hand over the inguinal region, palpate with the other hand. Record if the testis is descended, retractile or impalpable.
- Is there any scrotal swelling (hydrocele or hernia)?

In *females*:

- Do the external genitalia look normal?

Does the anus look normal? Any evidence of a fissure?

### **Rectal examination**

- This should not be performed routinely, and only for specific reasons
- Unpleasant and disliked by children
- Its usefulness in the ‘acute abdomen’ (e.g. appendicitis) is debatable in children, as they have a thin abdominal wall and so tenderness and masses can be identified on palpation of the abdomen. Some surgeons advocate it to identify a retrocaecal appendix, but interpretation is problematic as most children will complain of pain from the procedure.
- If intussusception is suspected, the mass may be palpable and stools looking like redcurrant jelly may be revealed on rectal examination.

### **Urinalysis**

Normal daily diuresis in children (appendix 5):

Newborns – 300 ml

2 years – 700 ml

5-6 years – 1000 ml

10 years – 1500 ml

- Clean catch urine specimen preferred and the use of urine bags in the diagnosis of urine tract infection is not advisable
- Dipstick testing for proteinuria, hematuria, glycosuria, leukocyturia
- Examination of the microscopic appearance of urine is helpful for determining the origin of hematuria (crenated red cells, red cell casts).

### **Brief neurological screen**

A quick neurological and developmental overview should be performed in all children. When doing this:

- Use common sense to avoid unnecessary examination
- Adapt it to the child's age
- Take into consideration the parent's account of developmental milestones.

Watch the child play, draw or write. Are the manipulative skills normal? Can he walk, run, climb, hop, skip, dance? Are the child's language skills and speech satisfactory? Are the social interactions appropriate? Does vision and hearing appear to be normal?

In infants, assess primarily by observation:

- Observe posture and movements of the limbs.
- When picking the infant up, note their tone. The limbs and body may feel normal, floppy or stiff. Head control may be poor, with abnormal head lag on pulling to sitting.

Most children are neurologically intact and do not require formal neurological examination of reflexes, tone, etc. More detailed neurological assessment is performed only if indicated. Specific neurological concerns or problems in development or behavior require detailed assessment.

### **Neck**

## ***Thyroid***

- Inspect – swelling uncommon in childhood; occasionally at puberty
- Palpate from behind and front for swelling, nodule, thrill
- Auscultate if enlarged
- Look for signs of hypo/hyperthyroidism.

## ***Lymph nodes***

Examine systematically – occipital, cervical, axillary, inguinal. Note size, number, consistency of any glands felt:

- Small, discrete, pea-sized, mobile nodes in the neck, groin and axilla – common in normal children, especially if thin
- Small, multiple nodes in the neck – common after upper respiratory tract infections (viral/bacterial)
- Multiple lymph nodes of variable size in children with extensive atopic eczema – frequent finding, no action required
- Large, hot, tender, sometimes fluctuant node, usually in neck – infected/abscess
- Variable size and shape:

infections: viral, e.g. infectious mononucleosis, or TB

rare causes: malignant disease (usually non-tender), Kawasaki disease, cat-scratch.

## **Blood pressure**

### ***Indications***

Must be closely monitored if critically ill, if there is renal or cardiac disease or diabetes mellitus, or if receiving drug therapy which may cause hypertension, e.g. corticosteroids. Not measured often enough in children.

### ***Technique***

When measured with a sphygmomanometer:

- Show the child that there is a balloon in the cuff and demonstrate how it is blown up.
- Use largest cuff which fits comfortably, covering at least two-thirds of the upper arm.

- The child must be relaxed and not crying.
- Systolic pressure is the easiest to determine in young children and clinically the most useful.
- Diastolic pressure is when the sounds disappear. May not be possible to discern in young children. Systolic pressure used in clinical practice.

### ***Measurement***

Must be interpreted according to a centile chart. Blood pressure is increased by tall stature and obesity. Charts relating blood pressure to height are available and preferable; however, for convenience, charts relating blood pressure to age are often used. An abnormally high reading must be repeated, with the child relaxed, on at least three separate occasions.

Cuff should be 2/3 upper arm (smaller cuffs give artificially high reading). Upper limit of normal systolic blood pressure for children 1-5 years - 110 mmHg, 6-10 years – 120 mmHg.

### **Eyes**

#### ***Examination***

Inspect eyes, pupils, iris and sclerae. Are eye movements full and symmetrical? Is nystagmus detectable? If so, may have ocular or cerebellar cause, or testing may be too lateral to the child. Are the pupils round (absence of posterior synechiae), equal, central and reactive to light? Is there a squint?

Epicanthic folds are common in Asian ethnic groups.

#### ***Ophthalmoscopy***

- In infants, the red reflex is seen from a distance of 20–30 cm. Absence of red reflex occurs in corneal clouding, cataract, retinoblastoma.
- Fundoscopy – difficult. Requires experience and cooperation. In infants, mydriatics are needed and an ophthalmological opinion may be required. Retinopathy of prematurity and retinopathy of congenital infections and choroido-retinal degeneration show characteristic findings. Retinal hemorrhages may be seen in head trauma or in ‘shaken baby syndrome’ (non-accidental injury).

- In older children with headaches, diabetes mellitus or hypertension, optic fundi should be examined. Mydriatics are not usually needed.

### **Ears and throat**

Examination is usually left until last, as it can be unpleasant. Explain what you are going to do. Show the parent how to hold and gently restrain a younger child to ensure success and avoid possible injury.

#### ***Throat***

Try quickly to get a look at the tonsils, uvula, pharynx and posterior palate. Older children (5 years +) will open their mouths as wide as possible without a spatula. A spatula is required for young children. Look for redness, swelling, pus or palatal petechiae. Also check the teeth for dental caries and other gross abnormalities.

#### ***Ears***

Examine ear canals and drums gently, trying not to hurt the child. Look for anatomical landmarks on the ear drum and for swelling, redness, perforation, dullness, fluid.

## **SCHEME OF PEDIATRIC HISTORY**

### **1. The passport**

Name

Surname of the child

Age                      Date of birth

Address (residence)

Date of hospitalization.

Discharging date (Do not mention if the patient is still in hospital, date of history taking)

Treatment period (Do not mention if the patient is still in hospital, last date of history taking)

### **2. Complaints of the patient (parents or relatives) at the moment of hospitalization and examination by the student**

### **3. Anamnesis of the disease (specifying each symptom or complaint)**

*Onset* - when did the symptom start?

*Acute or gradual* – did it come on suddenly or has it got worse gradually?

*Duration* – minutes / hours / days / weeks / months / years?

*Progression* - has it got worse/better or stayed same over the stated time frame?

*Intermittent or continuous* – is the symptom always there or does it come and go?

*Have you tried any medications & did the organism respond?* - e.g. fever & paracetamol

*Aggravating or relieving factors?* – e.g. vomiting triggered by feeding

*Any contact with similar illness in others/siblings, or infectious outbreaks?*

*Does anyone in the family have any similar symptoms?*

At the end after collecting the concerned complaints and anamnesis come to know about the affected systems and organs. Sometimes it also helps relative diagnosis of the suspected disease.

#### **4. Anamnesis of life**

*Hereditary and family anamnesis* (age of members of the family and their diseases).

Draw a family tree.

*Pregnancy and Birth History* (children under 3 years):

- From which pregnancy and birth.
- Toxemia during the 1<sup>st</sup> and 2<sup>nd</sup> period of present pregnancy (nausea, vomiting, hypertension, nephropathy, eclampsia).
- Diseases during the present pregnancy, and the treatment.
- Mother's nutrition. Professional hazards.
- Problems with previous pregnancy and birth (if any).
- Birth: period, preterm or post-term birth.

*Neonatal period:*

- Weight, length of the body
- 1<sup>st</sup> cry (immediately/cyanosed/apneic)
- Jaundice (parameters of bilirubin, medical assistance, etc.).



- Possible gynecological trauma.
- Time of placement of infant to mother's breast.
- Child's weight on the discharge from the maternity center.
- Day of the detachment of the umbilical cord and healing of the umbilical wound.
- Possible diseases during this period.

*Physical and neuro-psychological development (NPD)* of the child: smiling, ability to hold the head, sit, crawl, stand, walk, talk - compared with normal for this age (children under 1 year):

Dynamics of weight and length on the first year and in the next years

*Feeding history* (significant in child < 2 years, anemic or malnourished):

- Type of feeding: breast-feeding (duration), formula-feeding (at what age, composition of formula, amount, frequency), weaning (when, what, amount, frequency).
- Current diet/change in diet during the illness.

*Behavior* of the child at school and relationship with other children

*Significant illnesses in the past*: when and which, duration and complications.

*Immunization* (check vaccination card): types of vaccinations given, age at which started, doses and adverse effects

## **5. Allergic anamnesis**

Allergic diseases among relatives; reactions to medicines, food, plants, clothes, household items, domestic animals etc.

## **6. Social-economic conditions**

(satisfactory or unsatisfactory).

## **7. Status praesens objectivus** (the data of objective signs).

*General appearance of the patient.* General condition of the child (satisfactory, moderate, severe, very severe). How the patient feels, reaction to other people. Position in the bed (active, passive, compelled). Consciousness (clear, sopor, absent). Mood (quiet, depressed, excited). Sleep. Temperature.

***Anthropometrical parameters:*** weight and length (height) of the body, circumference of the head and chest, characteristics according to percentile tables (the conclusion about physical development).

***Skin:*** color and its disorders (pallor, icterus, hyperemia, cyanosis), elasticity, moisture (moist, dry), rash (localization and character: color, lesion type, size, shape, painful, itchy etc.), hemorrhages, scars, peeling. Skin temperature (cold, hot). Skin appendages (hair, nails).

***Mucous membranes:*** color, moisture, hemorrhages, erosion, enanthema, aphthae, ulcers and other pathological changes.

***Subcutaneous layer:*** uniformity of distribution, thickness, condensation, edema (their localization and distribution); degree of hypotrophy, obesity; tissue turgor.

***Muscular system:*** General development of muscles: underdeveloped, satisfactory (according to the age), muscle tone, palpatory tenderness, pain on moving, developmental anomalies of muscles (atrophy, hypertrophy, hypotonic, hypertension, paralysis and paresis),

***Bone system:*** size and form of the head, their deformities (frontal, occipital, parietal tubercle, craniotabes etc.), sizes of the frontal fontanel, the bones density.

Form of the thorax, rachitic “rosary”, Harrison fissure, “rickety thickening of wrists and ankles”, “the strings-of-pearls”, curvatures of the backbone and extremities, platypodia. Form, size, quantity, consistency, mobility, tenderness, edema and hyperemia of joints. Number of teeth: primary, permanent teeth.

Attention! While composing this particular section of the case history it is necessary to mention the specific symptoms according to the age of the child. For example: such symptoms of rickets as rachitic “rosary”, “strings-of-pearls” and other are seen only in 1-2 years of life as rickets is diagnosed only at this age. Such symptoms are not to be specified in grown up individuals.

***Lymphatic system:*** if lymph nodes are palpated, then it is necessary to specify the place of their localization, number, size, shape, consistency, tenderness, fusion with surrounding tissues.

***Pulmonary system.*** *Dyspnea*, its severity and characteristics. *Cough*: moment of the onset and characteristics (dry cough (non-productive), productive cough, barking cough), frequency (persistent or paroxysmal cough), severity and duration of paroxysm, its painfulness (painful, painless), presence of reprises. *Sputum*: mucous, purulent, mucopurulent, with blood. *Chest pain*: localization and character of pain (acute, dull pain). Is the pain associated with the intensity of movements, physical exercises, breathing depth or cough? *Nose*: free or disturbed nasal breathing. Nasal discharge: amount of discharge, its characteristics (mucous, purulent, bloody). *Voice*: loud, clear, husky, quiet, hoarseness, aphonic, snuffling. *Chest*: normal, emphysematous, rickets chest deformation, “pigeon”, funnel-shaped, etc. Rachitic rosary (large beads under the skin of the rib cage). Symmetry of chest expansion during breathing. Intercostal spaces (protrude, drowned, not changed).

*Comparative percussion of the lungs* (sound on percussion - normal, dull, local deafness, tympanus (high) or low sound over the infiltrated tissue).

*Topographic percussion of the lungs.* Lungs border when percussing on mid-clavicular, mid-axillar and scapular lines on both sides

*Auscultation.* Breathing patterns: puerile, vesicular, rough, weakened, extended exhalation, amphoric, absence of respiratory murmurs. *Râles*: dry (whistling, buzzing), moist (large, medium, small bubbling), crepitation. Presence of pleural friction rub. Respiratory rate per minute.

***Cardiovascular system.*** *Apical thrust* of the heart (diffuse or not), is determined visually or by palpation (in which intercostal space).

*Percussion*: borders of the heart (right, left in the 5th or 4th intercostal space, in the 3rd intercostal space and vascular fascicle).

*Auscultation*: heart sounds (clear, dull, flapping), tones splitting. Accents, gallop rhythm (atrial, ventricular). Heart murmurs and their relation to the phases of cardiac function (systolic and diastolic)

*Assessment of vessels*: arteries inspection, the degree of arteries and jugular veins pulsation.

*Pulse:* rate per minute, the degree of tension (weak, satisfactory), rhythm (regular, arrhythmic). Respiratory arrhythmia and other kinds of arrhythmias. The value of the arterial and venous blood pressure (systolic and diastolic).

***Digestive system.*** *Oral cavity:* color of the mucosa, presence of thrush, redness, rashes, spots, ulcers. Number of teeth, caries. *Tongue:* dry, moist, coated, its color, "raspberry", "geography", presence of teeth marks.

*Throat:* hyperemia (diffuse or limited), tonsils (normal or hypertrophy) and the degree of their enlargement, presence of fur (friability, fibrin, necrotizing etc.), fur color (white, yellow, grayish-white, gray, dirty), presence of purulent follicles, abscesses, ulcers. The posterior wall of the pharynx: hyperemia, cyanotic, coated.

*Uvula:* hyperemic, edematous, the uvula and soft palate mobility, the enlargement of follicles on the back of the throat.

*Halitosis:* fetid, sweetish, putrid, acetone and so on.

Presence of regurgitation, nausea, vomiting (single, repeated).

*Abdomen:* configuration, presence of flatulence, abdominal retraction, participation in the act of breathing, visible peristalsis and antiperistalsis, presence of venous network, divergence of the abdominal muscles, presence of hernias (inguinal, umbilical, femoral, linea alba), infiltration, invagination, pain, symptoms of the peritoneum irritation: Chauffer pain area, Desjardins, Mayo-Robson, Shchetkin-Blumberg's, Voskresensky's signs and others. Tension of the abdominal muscles on palpation: general or localized.

*Liver:* pain in the right upper quadrant (constant, paroxysmal), their power, irradiation. Borders of the liver (upper, lower), the size of the liver by Kurlov. Palpation of the liver: the edge (sharp, curved), consistency (elastic, dense, solid), surface (smooth, nodular), tenderness and its localization. Palpation of the gallbladder. Cystic symptoms (Murphy's, Kehr's, Mussy's, Orthner's signs and other).

*Spleen:* presence of pain in the left upper quadrant (dull, sharp). Palpation: sensitivity, density, roughness. Percussion: determination of the size.

*Stool*: (solid, liquid, semi-liquid, bulky, watery, scant), color, odor, presence of pathological impurities.

***Genitourinary system.*** Pain in the lumbar region and its characteristics. Swelling in the kidneys area. Palpation of the kidneys and their displaceability. Pasternatsky's symptom. Bladder (palpation, percussion). Pain on micturition. Urine volume, color, frequency of micturition and discharge from the urethra (pus, blood). The condition of the scrotum and testicles. Development of sexual organs in girls. Biological maturity (sexual formula: Ma, Ax, P, Me).

***Thyroid gland.*** Size, consistency, Von Graefe's sign, Mobius sign.

***Vision.*** Nystagmus, strabismus (heterotropia), ptosis, anisocoria, visual acuity, blurred vision, "flies before eyes", diplopia, keratitis, conjunctivitis, exophthalmus, palpebral fissures, finger tremor/jerks .

***Hearing.*** Acuity (normal, decreased). Ear discharge, tenderness on palpation of tragus or mastoid process.

***Nervous system.*** Consciousness (clear, confusion, stupor, sopor, unconsciousness, coma), delirium, hallucinations. Correspondence of age and psychological development. *Behavior*: active, passive, anxious. *Headaches*: periodic, permanent, their localization, presence of nausea, vomiting. Dizziness. Tinnitus, noise in ears, head, fainting, readiness for convulsions, convulsions.

*Gait*: normal, lurch, ataxia, paralytic walking. Romberg test. Presence of eyelids tremor when the eyes are closed.

*Pupils*: size, symmetry of papillary response to light (papillary light reflex).

*Reflexes*: tendinous, abdominal, conjunctival, pharyngeal. Presence of pathological reflexes. Dermographism.

*Skin sensitivity*: decreased, increased (tactile, pain, thermal). Meningeal signs (rigidity of neck and back muscles, Kernig's sign, Brudzinski's signs: upper, middle, lower). Infants: bulging fontanel, pulsating fontanel, Lessage's symptom.

## **8. Preliminary clinical diagnosis**

Based on the results of assessment (complaints, anamnesis morbi, epidemiological anamnesis, findings of objective clinical assessment).

Concomitant diagnoses \_\_\_\_\_

### **9. Plan of the patient examination and treatment**

A. Primary and additional diagnostic methods.

B. 1) Regimen; 2) diet; 3) medical treatment:

Etiologic treatment;

Pathogenetic treatment;

Symptomatic treatment.

Signature \_\_\_\_\_

### **10. Laboratory findings and results of additional clinical assessment by specialists (including interpretation of analyses)**

All the laboratory findings, instrumental investigations, X-Ray, as well as results of additional clinical assessment by specialists should be listed and interpreted in terms of dynamic changes.

### **11. Substantiation of the diagnosis (main)**

Should be carried out according to specific patient's data using the anamnestic, clinical and laboratory findings.

### **12. Differential diagnosis**

Specify the relevant syndrome or symptom on which the differential diagnosis of similar infectious and non-infectious diseases is carried out.

Describe common symptoms of the diseases to differentiate and analyze their distinct features.

### **13. Diary**

Every day fill in the description of patient's clinical state during the supervision period. Specify if the improvement occurs, or no changes or progression of the disease is observed.

Date	Detailed description of patient's clinical state at the date of evaluation	Recommendations (at the date of evaluation)
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Body temperature: morning - evening

Signature\_\_\_\_\_

#### 14. Prognosis

Favorable, unfavorable. Potential residual effects of the infectious disease survived.

#### 15. Epicrisis report

Name, surname \_\_\_\_\_

Age \_\_\_\_\_

Admitted to the hospital \_\_\_\_\_ date,

at the \_\_\_\_\_ day of the disease

Diagnosis on admission to the hospital \_\_\_\_\_

Clinical diagnosis (main)\_\_\_\_\_

Complications \_\_\_\_\_

Concomitant diagnosis \_\_\_\_\_

Nosocomial infection (date) \_\_\_\_\_

Treatment (list all the medicines, specify day and course doses for antibiotics).

Effect of the treatment\_\_\_\_\_.

Outcome \_\_\_\_\_

Discharged from the hospital for out-patient follow-up by pediatrician or other medical specialist (specify) \_\_\_\_\_date,

or continues the treatment at the hospital at the end of the supervision by the student

Detailed recommendations, including regimen, diet, etc\_\_

Recommendations if the treatment course should be continued at home

Duration of hospital treatment \_\_\_\_\_ - days

## **16. Follow up**

What specialist should perform the follow-up in case of the given infectious disease?

What should be included in the follow-up assessment and how long should it last?

What are the criteria of the admission to the school or kindergarten after the infectious disease?

Signature\_\_\_\_\_



## Physical development (centiles)

Centiles weight/ length	Centiles (bodies length)				
	3-10	10-25	25-75	75-90	90-97
<b>97-90</b>	Low, sharply disharmonious (body mass excess of 2 <sup>nd</sup> degree)	Lower than medium, sharply disharmonious (body mass excess of 2 <sup>nd</sup> degree)	Average, sharply disharmonious (body mass excess of 2 <sup>nd</sup> degree)	Higher than average, sharply disharmonious (body mass excess of 2 <sup>nd</sup> degree)	High, sharply disharmonious (body mass excess of 2 <sup>nd</sup> degree)
<b>90-75</b>	Low, disharmonious (body mass excess of 1 <sup>st</sup> degree)	Lower than average, disharmonious (body mass excess of 1 <sup>st</sup> degree)	Average, disharmonious (body mass excess of 1 <sup>st</sup> degree)	Higher than average, disharmonious (body mass excess of 1 <sup>st</sup> degree)	High, disharmonious (body mass excess of 1 <sup>st</sup> degree)
<b>75-25</b>	Low, harmonious	Lower than average, harmonious	Average, harmonious	Higher than average, harmonious	High, harmonious
<b>25-10</b>	Low, disharmonious (body mass deficiency of 1 <sup>st</sup> degree)	Lower than average, disharmonious (body mass deficiency of 1 <sup>st</sup> degree)	Average, disharmonious (body mass deficiency of 1 <sup>st</sup> degree)	Higher than average, disharmonious (body mass deficiency of 1 <sup>st</sup> degree)	High, disharmonious (body mass deficiency of 1 <sup>st</sup> degree)
<b>10-3</b>	Low, sharply	Lower than	Average,	Higher than	High, sharply

	disharmonious (body mass deficiency of 2 <sup>nd</sup> degree)	average, sharply disharmonious (body mass deficiency of 2 <sup>nd</sup> degree)	sharply disharmonious (body mass deficiency of 2 <sup>nd</sup> degree)	average, sharply disharmonious (body mass deficiency of 2 <sup>nd</sup> degree)	disharmonious (body mass deficiency of 2 <sup>nd</sup> degree)
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*Appendix 2*

**Normal respiratory rate in children (breaths/minute)**

<b>Age</b>	<b>Respiratory rate (breaths/minute)</b>
Under 3 months.	40-45
4-6 mo.	35-40
7-12 mo.	30-35
2-3 years	25-30
5-6 years	Approx. 25
10-12 years	20-22
14-15 years	18-20

*Appendix 3*

**Normal resting pulse rate in children (beats/minute)**

<b>Age</b>	<b>Heart rate (beats/minute)</b>
< 3 months	120-170
4-6 months	100-150
7-12 months	80-120
1-3 years	70-110
3-6 years	65-110
6-12 years	60-95
12 years and older	60-85

**Heart rate (centiles)**

Age	Centiles			
	10	25	75	90
Newborn	110	120	130	140
1	100	110	120	130
2	80	95	110	120
3-4	80	90	105	120
5-7	75	82	100	110
8-10	72	80	95	108
11-13	70	80	95	108
14-15	70	80	95	108
16-17	65	80	95	110

**Diuresis (ml/kg/hour)**

Age	Diuresis (ml/kg/hour)	Density
10 day	2,5	1.002-1.004
2 month	3,5	1.002-1.006
1 year	2	1.006-1.010
2-7 years	1,7	1.010-1.020
11-14 years	1,4	1.008-1.022
Adults	0,8	1.011-1.025

## LITERATURE

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