

Guide to the Comprehensive Pediatric H&P Write Up

INSTRUCTIONS FOR USE OF THE SECTION ON PEDIATRIC HISTORY AND PHYSICAL EXAM

The following outline for the Pediatric History and Physical Examination is comprehensive and detailed. In order to assimilate the information most easily, it is suggested that you read through the whole section before examining your first patient to get a general idea of the scope of the pediatric evaluation. Then, as you encounter patients with specific problems, you may return to the individual sections most pertinent to these patients to absorb the information in detail. Repeat practice with a variety of patients of different ages is crucial to the acquisition of skills in data collection. You should use every opportunity possible to evaluate patients in order to develop a sense of normal growth and development and appreciate the variations in patient encounter that is necessary to perform appropriate evaluation children of different ages.

OUTLINE FOR PEDIATRIC HISTORY

HISTORY

I. Presenting Complaint (Informant/Reliability of informant)

Patient's or parent's own brief account of the complaint and its duration. Use the words of the informant whenever possible.

II. Present Illness

Begin with statement that includes age, sex, color and duration of illness, ex.: This is the first APH admission for this 8 year old white male who has complained of headache for 12 hours PTA. When was the patient last entirely well? How and when did the disturbance start? Health immediately before the illness. Progress of disease; order and date of onset of new symptoms. Specific symptoms and physical signs that may have developed. Pertinent negative data obtained by direct questioning. Aggravating and alleviating factors. Significant medical attention and medications given and over what period.

Use day of admit (DOA) as the reference point for your timeline of present illness. Every event/symptom that occurs leading up to DOA should be listed as # day prior to admission (PTA)

In acute infections, statement of type and degree of exposure and interval since exposure.

For the well child, determine factors of significance and general condition since last visit.

III. Past Medical History

- **Birth**

A. Antenatal: Health of mother during pregnancy. Medical supervision, drugs, diet, infections such as rubella, etc., other illnesses, vomiting, toxemia, other complications; Rh typing and serology, pelvimetry, medications, x-ray procedure, maternal bleeding, mother's previous pregnancy history.

B. Natal: Duration of pregnancy, birth weight, kind and duration of labor, type of delivery, presentation, sedation and anesthesia (if known), state of infant at birth, resuscitation required, onset of respiration, first cry.

C. Neonatal: APGAR score; color, cyanosis, pallor, jaundice, cry, twitchings, excessive mucus, paralysis, convulsions, fever, hemorrhage, congenital abnormalities, birth injury. Difficulty in sucking, rashes, excessive weight loss, feeding difficulties. You might discover a problem area by asking if baby went home from hospital with his mother.

A common way to document birth history is as follows:

3445 g full term infant born to a 28 yo G2P2 O+ mother via normal spontaneous vaginal delivery after a pregnancy where mother received prenatal care in the first trimester whose prenatal labs were GBS-, HIV-, GC-, chlamydia -, RPR nonreactive. Mom reports no medications taken during pregnancy or delivery. Delivery was uncomplicated. No resuscitation was required. APGARs were 8 at 1 min and 9 at 5 min. Nursery course was uncomplicated and infant went home with mom on DOL#2.

- **Past Illnesses**

A comment should first be made relative to the child's previous general health, and then the specific areas listed below should be explored.

- A. Past medical history: including all diagnoses, infections, Accidents and Injuries (include ingestions): Age, type/nature, severity, sequelae.
- B. Past Hospitalizations: including operations, age. Include place of hospitalization and duration of hospitalization.
- C. Past Surgeries: where and by whom for what diagnosis
- D. Allergies, with specific attention to drug allergies: detail type of reaction. Results of allergy testing gif performed.
- E. Medications patient is currently taking- prescribed, OTC, homeopathic. Include dose, formulation, route and frequency.

- **Immunizations and Tests**

Be familiar with Advisory Committee on Immunization Practices (ACIP) recommendations for immunizations. List date and type of immunization, facility providing immunization as well as any complications or reactions. DO NOT LIST "Up to date per parent report" If no immunization record is available, include this as a problem in the assessment and plan so it will be followed up.

- **Growth and Development**

- A. Development

- Motor and Mental Development First raised head, rolled over, sat alone, pulled up, walked with help, walked alone, talked (meaningful words; sentences), formal screening when appropriate.
- Urinary continence during night; during day
- Control of feces.
- Comparison of development with that of siblings and parents.
- School grade, quality of work.
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- Physical Growth including menarche and other pubertal developments
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- Behavioral History
- Does child manifest any unusual behavior such as thumb sucking, excessive masturbation, severe and frequent temper tantrums, negativism, etc.?
- Sleep disturbances.
- Phobias.
- Pica (ingestions of substances other than food).
- Abnormal bowel habits, ex. - stool holding.
- Bed wetting (applicable only to child out of diapers).

- **Nutrition**

- A. Breast or Formula: Type, duration, major formula changes, time of weaning, difficulties. Be specific about how much milk or formula the baby receives. How does caretaker mix the formula?
- B. Vitamin Supplements: Type, when started, amount, duration.
- C. "Solid" Foods: When introduced, how taken, types.
- D. Appetite: Food likes and dislikes idiosyncrasies or allergies, reaction of child to eating. An idea of child's usual daily intake is important.

IV. Family History - use family tree whenever possible

- A. Age and health of family members (parents, grandparents, siblings)
- B. Stillbirths, miscarriages, abortions; age at death and cause of death of immediate members of family
- C. Known genetic diseases
- D. Diseases with a genetic contribution: allergy, blood dyscrasias, mental or nervous diseases, diabetes, cardiovascular diseases, kidney disease, rheumatic fever, neoplastic diseases, congenital abnormalities, cancer, convulsive disorders, others
- E. Health of contacts- ill exposures (tuberculosis....)

V. Social History

- A. Type of habitat. Age of habitat, number of people in home and relationship to patient
- B. Marital status of parents and involvement with child
- C. Parents employment
- D. Child care or school

VI. Environmental History

- A. Environmental tobacco smoke
- B. Water source to home
- C. Pets
- D. Smoke and CO detectors
- E. Firearms

VII. System Review

A system review will serve several purposes. It will often bring out symptoms or signs missed in collection of data about the present illness. It might direct the interviewer into questioning about other systems that have some indirect bearing on the present illness (ex. - eczema in a child with asthma). Finally, it serves as a screening device for uncovering symptoms, past or present, which were omitted in the earlier part of the interview. There is no need to repeat previously recorded information in writing a Review of Systems. Questions about health maintenance may be included here such as last dental visit, last ophthalmology visit...

- A. General: Unusual weight gain or loss, fatigue, temperature sensitivity, mentality. Pattern of growth (record previous heights and weights on appropriate graphs). Time and pattern of pubescence.
- B. Eyes: Have the child's eyes ever been crossed? Any foreign body or infection, glasses for any reason.
- C. Ears, Nose and Throat: Frequent colds, sore throat, sneezing, stuffy nose, discharge, post-nasal drip, mouth breathing, snoring, otitis, hearing, adenitis.
- D. Teeth: Age of eruption of deciduous and permanent; number at one year; comparison with siblings.
- E. Cardiorespiratory: Frequency and nature of disturbances. Dyspnea, chest pain, cough, sputum, wheeze, expectoration, cyanosis, edema, syncope, tachycardia.
- F. Gastrointestinal: Vomiting, diarrhea, constipation, type of stools, abdominal pain or discomfort, jaundice.
- G. Genitourinary: Enuresis, dysuria, frequency, polyuria, pyuria, hematuria, character of stream, vaginal discharge, menstrual history, bladder control, abnormalities of penis or testes. Details of menarche and menstruation for adolescent females
- H. Neuromuscular: Headache, nervousness, dizziness, tingling, convulsions, habit spasms, ataxia, muscle or joint pains, postural deformities, exercise tolerance, gait.

- I. Endocrine: Disturbances of growth, excessive fluid intake, polyphagia, goiter, thyroid disease.
- J. Hematologic: Bruise easily, difficulty stopping bleeds, lumps under arms, neck; fevers, shakes, shivers
- K. Rheumatologic: Joints: pain, stiffness, swollen, variation in joint pain during day, fingers painful/ blue in cold, dry mouth, red eyes, back, neck pain
- L. Skin: Ask about rashes, hives, problems with hair, skin texture or color, etc.

OUTLINE FOR PEDIATRIC PHYSICAL EXAM

PHYSICAL EXAMINATION

Every child should receive a complete systematic examination at regular intervals. One should not restrict the examination to those portions of the body considered to be involved on the basis of the presenting complaint.

Approaching the Child

Adequate time should be spent in becoming acquainted with the child and allowing him/her to become acquainted with the examiner. The child should be treated as an individual whose feelings and sensibilities are well developed, and the examiner's conduct should be appropriate to the age of the child. A friendly manner, quiet voice, and a slow and easy approach will help to facilitate the examination.

Observation of the Patient

Although the very young child may not be able to speak, one still may receive much information from him/her by being observant and receptive. The total evaluation of the child should include impressions obtained from the time the child first enters until s/he leaves; it should not be based solely on the period during which the patient is on the examining table. In general, more information is obtained by careful inspection than from any of the other methods of examination.

Sequence of Examination

Skill, tact and patience are required to gather an optimal amount of information when examining a child. There is no routine one can use and each examination should be individualized. Ham it up and regress. Get down to the child's level and try to gain his trust. The order of the exam should conform to the age and temperament of the child. For example, many infants under 6 months are easily managed on the examining table, but from 8 months to 3 years you will usually have more success substituting the mother's lap. Certain parts of the exam can sometimes be done more easily with the child in the prone position or held against the mother. After 4 years, they are often cooperative enough for you to perform the exam on the table again.

Wash your hands with warm water before the examination begins. You will impress your patient's mother and not begin with an adverse reaction to cold hands in your patients. With the younger child, get to the heart, lungs and abdomen before crying starts. Save looking at the throat and ears for last. If part of the examination is uncomfortable or painful, tell the child in a warm, honest, but determined tone that this is necessary. Looking for animals in their ears or listening to birdies in their chests is often another useful approach to the younger child.

If your bag of tricks is empty and you've become hoarse from singing and your lips can no longer bring forth a whistle, you may have to turn to muscle. Various techniques are used to restrain children and experience will be your best ally in each type of situation.

Remember that you must respect modesty in your patients, especially as they approach pubescence. Sometime during the examination, however, every part of the child must have been undressed. It usually works out best to start with those areas which would least likely make your patient anxious and interfere with his developing confidence in you.

General Physical Examination

I. Vital Signs and Measurements

Temperature, pulse rate, and respiratory rate (TPR); blood pressure (the cuff should cover 2/3 of the upper arm), weight, height, and head circumference. The weight should be recorded at each visit; the height should be determined at monthly intervals during the first year, at 3-month intervals in the second year, and twice a year thereafter. The height, weight, and head circumference of the child should be compared with standard charts and the approximate percentiles recorded. Multiple measurements at intervals are of much greater value than single ones since they give information regarding the pattern of growth that cannot be determined by single measurements.

II. General Appearance

Does the child appear well or ill? Degree of prostration; degree of cooperation; state of comfort, nutrition, and consciousness; abnormalities, gait, posture, and coordination; estimate of intelligence; reaction to parents, physician, and examination; nature of cry and degree of activity, facies and facial expression. Be as descriptive as possible in this section so that your patient "can be picked out of a crowd."

III. Skin

Color (cyanosis, jaundice, pallor, erythema), texture, eruptions, hydration, edema, hemorrhagic manifestations, scars, dilated vessels and direction of blood flow, hemangiomas, cafe-au-lait areas and nevi, Mongolian (blue-black) spots, pigmentation, turgor, elasticity, and subcutaneous nodules. Striae and wrinkling may indicate rapid weight gain or loss. Sensitivity, hair distribution and character, and desquamation. Be particularly careful in this section to describe your physical exam findings instead of just listing a diagnosis. Also pay particular attention to details that will help determine progression or resolution of lesion at subsequent visits for example, size and location...

***Practical notes:**

- A. Loss of turgor, especially of the calf muscles and skin over abdomen, is evidence of dehydration.
- B. The soles and palms are often bluish and cold in early infancy; this is of no significance.
- C. The degree of anemia cannot be determined reliably by inspection, since pallor (even in the newborn) may be normal and not due to anemia.

- D. To demonstrate pitting edema in a child it may be necessary to exert prolonged pressure.
- E. A few small pigmented nevi are commonly found, particularly in older children.
- F. Spider nevi occur in about 1/6 children under 5 years of age and almost 1/2 of older children.
- G. "Mongolian spots" (large, flat black or blue-black areas) are frequently present over the lower back and buttocks; they have no pathologic significance.
- H. Cyanosis will not be evident unless at least 5 gm of reduced hemoglobin are present; therefore, it develops less easily in an anemic child.
- I. Carotenemic pigmentation is usually most prominent over the palms and soles and around the nose, and spares the conjunctivas.

IV. Lymph Nodes

Location, size, sensitivity, mobility, consistency. One should routinely attempt to palpate occipital, preauricular, anterior cervical, posterior cervical, sub mandibular, submental, axillary, epitrochlear, and inguinal lymph nodes.

***Practical notes:**

- A. Enlargement of the lymph nodes occurs much more readily in children than in adults.
- B. Small inguinal lymph nodes are palpable in almost all healthy young children. Small, mobile, non-tender shotty nodes are commonly found in residue of previous infection.

V. Head

Size, shape, circumference, asymmetry, cephalhematoma, bosses, craniotabes, control, molding, bruit, fontanel (size, tension, number, abnormally late or early closure), sutures, dilated veins, scalp, hair (texture, distribution, parasites), face, transillumination.

***Practical notes:**

- A. The head is measured at its greatest circumference; this is usually at the midforehead anteriorly and around to the most prominent portion of the occiput posteriorly.
- B. Fontanel tension is best determined with the quiet child in the sitting position.
- C. Slight pulsations over the anterior fontanel may occur in normal infants.
- D. Although bruits may be heard over the temporal areas in normal children, the possibility of an existing abnormality should not be overlooked.
- E. Craniotabes may be found in the normal newborn infant (especially the premature) and for the first 2-4 months.
- F. A positive Macewen's sign ("cracked pot" sound when skull is percussed with one finger) may be present normally as long as the fontanel is open.

G. Transillumination of the skull can be performed by means of a flashlight with a sponge rubber collar so that it forms a tight fit when held against the head.

VI. Face

Symmetry, paralysis, distance between nose and mouth, distance between eyes, depth of nasolabial folds, bridge of nose, distribution of hair, size of mandible, swellings, hypertelorism, Chvostek's sign, tenderness over sinuses.

VII. Eyes

Photophobia, visual acuity, muscular control, nystagmus, Mongolian slant, Brushfield spots, epicanthic folds, lacrimation, discharge, lids, exophthalmos or enophthalmos, conjunctivas; pupillary size, shape, reaction to light and accommodation; media (corneal opacities, cataracts), fundi, visual fields (in older children). At 2-4 weeks an infant will follow light. By 3-4 months, coordinated eye movements should be seen.

***Practical notes:**

A. The newborn infant will usually open his eyes if he/she is placed in the prone position, supported with one hand on the abdomen, and lifted over the examiner's head.

B. Not infrequently, one pupil is normally larger than the other. This sometimes occurs only in bright or in subdued light.

C. Examination of the fundi should be part of every complete physical examination, regardless of the age of the child; dilatation of pupils may be necessary for adequate visualization.

D. A mild degree of strabismus may be present during the first 6 months of life but should be considered abnormal after that time.

E. To test for strabismus in the very young or uncooperative child, note where a distant source of light is reflected from the surface of the eyes; the reflection should be present on corresponding portions of the two eyes.

F. Small areas of capillary dilatation are commonly seen on the eyelids of normal newborn infants.

G. Most infants produce visible tears during the first few days of life but consistent tear production occurs after the first 4-6 weeks of life.

VIII. Nose

Exterior, shape, mucosa, patency, discharge, bleeding, pressure over sinuses, flaring of nostrils, septum.

At birth the maxillary antrum and anterior and posterior ethmoid cells are present. At 2-4 years pneumatization of the frontal sinus takes place but is rarely a site of infection until the 6th - 10th year. Though the sphenoid sinus is present at birth, it does not assume clinical significance until the 5th to 8th year.

IX. Mouth

Lips (thinness, down turning, fissures, color, cleft), teeth (number, position, caries, mottling, discoloration, notching, malocclusion or malalignment), mucosa (color, redness of Stensen's duct, enanthems, Bohn's nodules, Epstein's pearls), gum, palate, tongue, uvula, mouth breathing, geographic tongue (usually normal).

X. Throat

Tonsils (size, inflammation, exudate, crypts, inflammation of the anterior pillars), mucosa, hypertrophic lymphoid tissue, postnasal drip, epiglottis, voice (hoarseness, stridor, grunting, type of cry, speech). The number and condition of the teeth should be recorded. (A child should have 20 teeth by age 2½ years. When the teeth begin to erupt is quite variable but most infants have their two lower central incisors by 8-10 months.

A. Before examining a child's throat it is advisable to examine his mouth first. Permit the child to handle the tongue blade, nasal speculum and flashlight so that he/she can overcome his fear of the instruments. Then ask the child to stick out his tongue and say "Ah" louder and louder. In some cases this may allow an adequate examination. In others, if the child is cooperative enough, he/she may be asked to "pant like a puppy;" while he/she is doing this, the tongue blade is applied firmly to the rear of the tongue. Gagging need not be elicited in order to obtain a satisfactory examination. In still other cases, it may be expedient to examine one side of the tongue at a time, pushing the base of the tongue to one side and then to the other. This may be less unpleasant and is less apt to cause gagging.

B. Young children may have to be restrained to obtain an adequate examination of the throat. Eliciting a gag reflex may be necessary if the oral pharynx is to be adequately seen.

C. The small child's head may be restrained satisfactorily by having the mother place her hands at the level of the child's elbows while the arms are held firmly against the sides of his head.

D. If the child can sit up, the mother is asked to hold him erect in her lap with his back against her chest. She then holds his left hand in her left hand and his right hand in her right hand, and places them against the child's groin or lower thighs to prevent him from slipping down from her lap. If the throat is to be examined in natural light, the mother faces the light. If artificial light and a head mirror are used, the mother sits with her back to the light. In either case, the physician uses one hand to hold the head in position and the other to manipulate the tongue blade.

E. Young children seldom complain of sore throat even in the presence of significant infection of the pharynx and tonsils.

XI. Ears

Pinnas (position, size), canals, tympanic membranes (landmarks, mobility, perforation, inflammation, discharge), mastoid tenderness and swelling, hearing (including hearing screen).

***Practical notes:**

A. A test for hearing is an important part of the physical examination of every infant.

B. The ears of all sick children should be examined.

C. Before actually examining the ears, it is often helpful to place the speculum just within the canal, remove it and place it lightly in the other ear, remove it again, and proceed in this way from one ear to the other, gradually going farther and farther, until satisfactory examination is completed.

D. In examining the ear, as large a speculum as possible should be used and should be inserted no farther than necessary, both to avoid discomfort and to avoid pushing wax in front of the speculum so that it obscures the field. The otoscope should be held balanced in the hand by holding the handle at the end nearest the speculum. One finger should rest against the head to prevent injury resulting from sudden movement by the child.

E. The child may be restrained most easily if he/she is lying on his abdomen.

F. Low-set ears are present in a number of congenital syndromes, including several that are associated with mental retardation. The ears may be considered low-set if they are below a line drawn from the lateral angle of the eye and the external occipital protuberance.

G. Congenital anomalies of the urinary tract are frequently associated with abnormalities of the pinnae.

H. To examine the ears of an infant it is usually necessary to pull the auricle backward and downward; in the older child the external ear is pulled backward and upward.

XII. Neck

Position (torticollis, opisthotonos, inability to support head, mobility), swelling, thyroid (size, contour, bruit, isthmus, nodules, tenderness), lymph nodes, veins, position of trachea, sternocleidomastoid (swelling, shortening), webbing, edema, auscultation, movement, tonic neck reflex.

***Practical notes:**

In the older child, the size and shape of the thyroid gland may be more clearly defined if the gland is palpated from behind.

XIII. Thorax

Shape and symmetry, veins, retractions and pulsations, beading, Harrison's groove, flaring of ribs, pigeon breast, funnel shape, size and position of nipples, breasts, length of sternum, intercostal and substernal retraction, asymmetry, scapulas, clavicles.

***Practical notes:**

At puberty, in normal children, one breast usually begins to develop before the other. In both sexes tenderness of the breasts is relatively common. Gynecomastia is not uncommon in the male.

XIV. Lungs

Type of breathing, dyspnea, prolongation of expiration, cough, expansion, fremitus, flatness or dullness to percussion, resonance, breath and voice sounds, rales, wheezing.

***Practical notes:**

A. Breath sounds in infants and children normally are more intense and more bronchial, and expiration is more prolonged, than in adults.

B. Most of the young child's respiratory movement is produced by abdominal movement; there is very little intercostal motion.

C. If one places the stethoscope over the mouth and subtracts the sounds heard by this route from the sounds heard through the chest wall, the difference usually represents the amount produced intrathoracically.

XV. Heart

Location and intensity of apex beat, precordial bulging, pulsation of vessels, thrills, size, shape, auscultation (rate, rhythm, force, quality of sounds - compare with pulse as to rate and rhythm; friction rub-variation with pressure), murmurs (location, position in cycle, intensity, pitch, effect of change of position, transmission, effect of exercise).

***Practical notes:**

A. Many children normally have sinus arrhythmia. The child should be asked to take a deep breath to determine its effect on the rhythm.

B. Extra systoles are not uncommon in childhood.

C. The heart should be examined with the child recumbent.

XVI. Abdomen

Size and contour, visible peristalsis, respiratory movements, veins (distension, direction of flow), umbilicus, hernia, musculature, tenderness and rigidity, tympany, shifting dullness, tenderness, rebound tenderness, pulsation, palpable organs or masses (size, shape, position, mobility), fluid wave, reflexes, femoral pulsations, bowel sounds. If the liver is palpable below the right costal margin, its total span must be recorded. A deep abdomen palpation must be done on every child.

***Practical notes:**

A. The abdomen may be examined while the child is lying prone in the mother's lap or held over her shoulder, or seated on the examining table with his back to the doctor. These positions may be particularly helpful where tenderness, rigidity, or a mass must be palpated. In the infant the examination may be aided by having the child suck at a "sugar tip" or nurse at a bottle.

B. Light palpation, especially for the spleen, often will give more information than deep.

C. Umbilical hernias are common during the first 2 years of life. They usually disappear spontaneously.

XVII. Male Genitalia

Circumcision, meatal opening, hypospadias, phimosis, adherent foreskin, size of testes, cryptorchidism, scrotum, hydrocele, hernia, pubertal changes.

***Practical notes:**

A. In examining a suspected case of cryptorchidism, palpation for the testicles should be done before the child has fully undressed or become chilled or had the cremasteric reflex stimulated. In some cases, examination while the child is in a hot bath may be helpful. The boy should also be examined while sitting in a chair holding his knees with his heels on the seat; the increased intra-abdominal pressure may push the testes into the scrotum.

B. To examine for cryptorchidism, one should start above the inguinal canal and work downward to prevent pushing the testes up into the canal or abdomen.

C. In the obese body, the penis may be so obscured by as to appear abnormally small. If this fat is pushed back, a penis of normal size is usually found.

XVIII. Female Genitalia

Vagina (imperforate, discharge, adhesions), hypertrophy of clitoris, pubertal changes.

***Practical note:**

Digital or speculum examination is rarely done until after puberty.

XIX. Rectum and Anus

Irritation, fissures, prolapse, imperforate anus. The rectal examination should be performed with the little finger (inserted slowly). Note muscle tone, character of stool, masses, tenderness, sensation. Examine stool on glove finger (gross, microscopic, culture, guaiac), as indicated.

XX. Extremities

A. General: Deformity, hemiatrophy, hemihypertrophy, bowlegs (common in infancy), knock-knees (common after age 2), paralysis, edema, coldness, posture, gait, stance, asymmetry.

B. Joints: Swelling, redness, pain, limitation, tenderness, motion, rheumatic nodules, carrying angle of elbows, tibial torsion.

C. Hands and feet: Extra digits, clubbing, simian lines, curvature of little finger, deformity of nails, splinter hemorrhages, flat feet (feet commonly appear flat during first 2 years), abnormalities of feet, dermatoglyphics, width of thumbs and big toes, syndactyly, length of various segments, dimpling of dorsa, temperature.

D. Peripheral Vessels: Presence, absence or diminution of arterial pulses.

XXI. Spine and Back

Posture, curvatures, rigidity, webbed neck, spina bifida, pilonidal dimple or cyst, tufts of hair, mobility, Mongolian spots, tenderness over spine, pelvis or kidneys.

XXII. Neurologic Examination

A. Cerebral Function: General behavior, level of consciousness, intelligence, emotional status, memory, orientation, illusions, hallucinations, cortical sensory interpretation, cortical motor integration, ability to understand and communicate, auditory-verbal and visual-verbal comprehension, recognition of visual object, speech, ability to write, performance of skilled motor acts.

B. Cranial Nerves:

1. I (olfactory) - Identify odors; disorders of smell
2. II (optic) - Visual acuity, visual fields, ophthalmoscopic examination, retina.
3. III (oculomotor), IV (trochlear), and VI (abducens) - Ocular movements, ptosis, dilatation of pupil, nystagmus, pupillary accommodation, and pupillary light reflexes.
4. V (trigeminal) - Sensation of face, corneal reflex, masseter and temporal muscles, maxillary reflex (jaw jerk).
5. VII (facial) - Wrinkle forehead, frown, smile, raise eyebrows, asymmetry of face, strength of eyelid muscles, taste on anterior portion of tongue.
6. VIII (acoustic) -
 - a. Cochlear portion - Hearing, lateralization, air and bone conduction, tinnitus.
 - b. Vestibular - Caloric tests.
7. IX (glossopharyngeal), X (vagus) - Pharyngeal gag reflex, ability to swallow and speak clearly; sensation of mucosa of pharynx, soft palate, and tonsils; movement of pharynx, larynx, and soft palate; autonomic functions.
8. XI (accessory) - Strength of trapezius and sternocleidomastoid muscles.
9. XII (hypoglossal) - Protrusion of tongue, tremor, strength of tongue.

C. Cerebellar Function: Finger to nose, finger to examiner's finger, rapidly alternating pronation and supination of hands; ability to run heel down other shin and to make a requested motion with foot; ability to stand with eyes closed; walk; heel to toe walk; tremor; ataxia; posture; arm swing when walking; nystagmus; abnormalities of muscle tone or speech.

D. Motor System: Muscle size, consistency, and tone; muscle contours and outlines; muscle strength; myotonic contraction; slow relaxation; symmetry or posture; fasciculations; tremor; resistance to passive movement; involuntary movement.

E. Sensory System: Hearing, vision, light touch, pain, position, vibration.

F. Reflexes:

1. Deep reflexes - Biceps, brachioradialis, triceps, patellar, Achilles; rapidity and strength of contraction and relaxation.
2. Superficial reflexes - Abdominals, cremasteric, plantar, gluteal.
3. Pathologic reflexes - Babinski, Chaddock, Oppenheim, Gordon.

G. Newborn Neurological Examination

***Practical Points:**

Observe the normal flexion of the term infant in contrast to the non-flexed, even flaccid appearance of the normal resting premature. The shape of the premature skull is usually dolichocephalic (long and narrow). Elicit the normal reflexes of grasping (hand and foot), sucking, rooting, Moro and automatic walking. Palpate the head to identify the anterior and posterior fontanelles as well as the sagittal, coronal, metopic and lambdoid sutures.

Impression and Plan

I. Problem List

The problems can be definite diagnoses, symptoms, abnormal findings, or other concerns. Probable or possible diagnosis ("rule out") should not be listed as problems. If your problem list contains a number of symptoms or signs that initially do not fit together each should be listed separately. They may on subsequent days be seen as manifestations of the specific disease. They may then be combined into one problem.

Health Maintenance should be included on the problem list for all children. We list it as a problem to remind us that our major goal is to not let the immediate disease obscure our view of the whole patient. Include here the follow up plan, even from the start. That will help remind the inpatient care team to communicate with the primary care provider.

An example of a problem list follows for a child who is hospitalized with fever, vomiting and pyuria. You find in the past history that he had an allergic reaction to penicillin 6 months ago. In this case the problem list might be put in the chart as:

Fever

Vomiting

History of penicillin allergy

Health Maintenance

Any new problems can be added as the database expands.

II. Impression

A diagnostic impression should be developed. A problem list can be useful for beginners to try to synthesize a patient's findings into a coherent diagnosis and is highly encouraged in your formal write ups. One useful way to synthesize this information is to first describe the anatomy of each abnormality, then to describe the pathologic process (e.g., neoplastic, inflammatory, infectious), finally arriving at a coherent diagnosis. The cycle of data collection,

hypothesis setting, hypothesis testing, and action is put into place. The selection of a diagnostic pivot, or unique finding, may assist in narrowing down the differential diagnosis. The rules of parsimony, chronology, and plausibility should be remembered. Common diagnostic errors, such as premature closure (i.e., reaching a conclusion before there is enough data to support it) should be avoided. Common and catastrophic diagnoses are the most important ones to address.

III. Plan

A diagnostic and therapeutic plan should address each diagnostic impression. Tests should be ordered only if the result will alter the plan. Pediatricians tend to be fairly conservative in prescribing medication, especially for self-limited diseases, such as the common cold. One useful way to delineate a plan is by systems (e.g., cardiovascular, pulmonary, hematologic, infectious, fluid/electrolytes/nutrition, etc.).

IV. Discussion

A concise discussion of one or more aspects of our patient's medical problem should follow. The topic should be pertinent to your patient. The goal is not to exhaust the medical literature on a given topic, but to stimulate patient-oriented reading and to encourage you to synthesize your thoughts.

For example, on a patient admitted with sickle cell disease and fever, you might choose to discuss the immune problems of children with sickle cell and their clinical importance. You would not be expected to discuss the molecular biology of sickling and all the various problems this creates.

After you have demonstrated outside reading on a topic, the most important step in the discussion is to apply that reading to the care of your patient. Write at least a concluding paragraph in your discussion that directly relates what you have read to the care of your patient. For example, when writing about immune problems in sickle cell disease, you might conclude with a paragraph of your patient's probable immune problems given his sickle cell disease. This will show interpretation of your reading and application to your patient's care based on his age, past medical history, and current presenting symptoms.

If you are unsure about a topic, or need help with sources, discuss this with your attending.

Include a list of references used at the end of your discussion. At least one basic text and in addition one recent article from the peer reviewed literature should be included as references.

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