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Staff Nurse

Eklavya Model Residential Schools

Tier-II

Volume - 4

SIERRA INNOVATIONS

INDEX

1 CHAPTER Pediatric Nursing

Human Growth and Development

Principles of Growth

A. Traditional definition of growth is limited to physical maturation
B. Integrated definition includes functional maturation
C. Growth is complex with all aspects closely related
D. Growth is measured both quantitatively and qualitatively over a period of time
E. Although the rate is not even, growth is a continuous and orderly process
    1. Infancy: most rapid period of growth
    2. Preschool to puberty: slow and uniform rate of growth
    3. Puberty: (growth spurt) second most rapid growth period
    4. After puberty: decline in growth rate till death
F. There are regular patterns in the direction of growth and development, such as the cephalocaudal law (from head to toe) and the proximodistal law (from center of body to periphery)
G. Different parts of the body grow at different rates
    1. Prenatally: head grows the fastest
    2. During the first year: elongation of trunk dominates
H. Both rate and pattern of growth can be modified, most obviously by nutrition
I. There are critical or sensitive periods in growth and development, such as brain growth during uterine life and infancy
J. Although there are specified sequences for achieving growth and development, each individual proceeds at own rate
K. Development is closely related to the maturation of the nervous system; as some primitive reflexes disappear, they are replaced by a voluntary activity such as grasp

Characteristics Of Growth

A. Circulatory System

1. Heart Rate Decreases With Increasing Age
    a. Infancy: 120 beats per minute (bpm)
    b. One year: 80 to 120 bpm
    c. Childhood: 70 to 110 bpm
    d. Adolescence to adulthood: 55 to 90 bpm (after maturity, women have slightly higher pulse rate than men)

2. Blood Pressure Increases With Age
    a. Ranges from 40 to 70 mm Hg diastolic to 65 to 140 mm Hg systolic
    b. These levels increase about 2 to 3 mm Hg per year starting at age 7 years
    c. Systolic pressure in adolescence: higher in males than in females

3. HEMOGLOBIN
    a. Highest at birth, 17 g per 100 ml of blood; then decreases to 10 to 15 g per 100 ml by 1 year
    b. Fetal hemoglobin (60% to 90% of total hemoglobin) gradually decreases during the first year to less than 5%
    c. Gradual increase in hemoglobin level to 14.5 g per 100 ml between 1 and 12 years of age
    d. Level higher in males than in females

B. **Respiratory System**

1. Rate Decreases With Increase In Age

a. Infancy: 30 to 40 per minute

b. Childhood: 20 to 24 per minute

c. Adolescence and adulthood: 16 to 18 per minute

2. VITAL CAPACITY

a. Gradual increase throughout childhood and adolescence, with a decrease in later life

b. Capacity in males exceeds that in females

3. BASAL METABOLISM

a. Highest rate is found in the newborn

b. Rate declines with increase in age; higher in males than in females

C. Urinary System

1. premature and full-term newborns have some inability to concentrate urine
   a. specific gravity (newborn): 1.001 to 1.02
   b. specific gravity (others): 1.001 to 1.03
2. glomerular filtration rate greatly increased by 6 months of age
3. glomerular filtration rate reaches adult values between 1 and 2 years of age
4. glomerular filtration rate gradually decreases after 20 years of age

D. Digestive system

1. Stomach size is small at birth; rapidly increases during infancy and childhood
2. Peristaltic activity decreases with advancing age
3. Blood glucose levels gradually rise from 75 to 80 mg per 100 ml of blood in infancy to 95 to 100 mg during adolescence
4. Premature infants have lower blood glucose levels than do fullterm infants
5. Enzymes are present at birth to digest proteins and a moderate amount of fat, but only simple sugars (amylase is produced as starch is introduced)
6. Secretion of hydrochloric acid and salivary enzymes increases with age until adolescence; then decreases with advancing age

E. Nervous system

1. Brain reaches 90% of total size by 2 years of age
2. All brain cells are present by end of the first year, although their size and complexity will increase
3. Maturation of the brainstem and spinal cord follows cephalocaudal and proximodistal laws

F. Impact on medications

1. Pediatric dosages differ from adult medication dosages as a result of differences in physiology
   a. Immature liver function
   b. Immature kidney function
   c. Decreased gastric function
   d. Decreased plasma protein concentration
   e. Altered body composition
      (1) Decreased fat
      (2) Increased water
2. Calculate dosage based on body surface area (m2) to ensure that the child receives the correct drug dosage within a safe therapeutic range
3. Dosage can also be calculated based on body weight, although it is not as accurate as surface area
   a. For most drugs the difference in calculated dosage is not significant
   b. Children at either higher or lower growth chart percentiles will have the greatest difference
4. Child must be closely monitored for signs and symptoms of toxicity

Play

Functions of Play

A. Educational
B. Recreational
C. Physical development
D. Social and emotional adjustment
    1. Learn moral values
    2. Develop the idea of sharing
E. Therapeutic

Types of Play

A. Active, physical
    1. Push-and-pull toys
    2. Riding toys
    3. Sports and gym equipment
B. Manipulative, constructive, creative, or scientific
    1. Blocks
    2. Construction toys such as erector sets
    3. Drawing sets
    4. Microscope and chemistry sets
    5. Books
    6. Computer programs
C. Imitative, imaginative, and dramatic
    1. Dolls
    2. Dress-up costumes
    3. Puppets
D. Competitive and social
    1. Games
    2. Role playing

Criteria for Judging The Suitability of Toys

A. Safety
B. Compatibility
    1. Child's age
    2. Level of development
    3. Experience
C. Usefulness
    1. Challenge to development of the child
    2. Enhancing social and personality development
    3. Increasing motor and sensory skills
    4. Developing creativity
    5. Expressing emotions
    6. Achieving mastery
    7. Implementing therapeutic procedures

Criteria for Judging The Nonsuitability of Toys

A. Unsafe
B. Beyond the child's level of growth and development
C. Overstimulating; frustrating
D. Limited uses and transient value (see play for each age group)
E. Foster isolation from peer group

Meeting The Needs of The Family of An Infant Orchild With Special Needs

A. Recognize that members of the family will exhibit a variety of responses, such as grief and mourning, chronic grief, and excessive use of defense mechanisms

B. Understand The Stages of Chronic Grief

1. Shock and disbelief: parents tend to:
   a. Learn about the deformity but deny the facts
   b. Feel inadequate and guilty
   c. Feel insecure in their ability to care for the child
   d. "Doctor shop" in hope of finding solutions
2. Awareness of the special needs: parents tend to:
   a. Feel guilty, angry, and depressed
   b. Envy well children: closely related to bitterness and anger
   c. Search for clues or reasons why this happened to them
   d. Reject and feel ambivalent toward the child
3. Restitution or recovery phase: parents tend to:
   a. See the child's special needs in proper perspective
   b. Function more effectively and realistically
   c. Socially and emotionally accept the child
   d. Reintegrate family life without centering it around the child

C. Help parents and siblings gain awareness of the child's special needs

1. Learning cannot take place until awareness of the problem exists
2. Help the parents develop an awareness through their own realization of the problem rather than identifying problem for them
3. Help the parents see the problem by drawing attention to certain manifestations such as failure to walk or talk
4. Allow family to acknowledge difficulty at own pace, if reasonable

D. Help the family understand the child's potential ability and assist them in setting realistic goals

1. Help family feel a sense of adequacy in parenting by emphasizing good care, identifying small steps in learning process of child, and acquainting them with parents of children with similar problems
2. Teach family how to work with their child in simple childhood tasks of sitting, walking, talking, toileting, feeding, and dressing
3. Teach family how to stimulate the child's learning of new skills

E. Encourage the parents to treat the child as normally as possible; assist them to help child deal with frustrations

1. Encourage them to avoid overprotection and to use consistent, simple discipline
2. Help them become aware of the effects of this child on siblings, who may resent the excessive attention given to this child

F. Provide the family with an outlet for own emotional tensions and needs

1. Acquaint them with organizations, especially groups of parents who have children with similar problems
2. Be a listener, not a preacher
3. Assist siblings who may fear the possibility of giving birth to children with similar problems

G. Teach parents the importance of follow-up and long-term medical supervision

H. Evaluate clients' response and revise plan as necessary

General Nursing Diagnoses for The Family of A Child With Special Needs

A. Risk for altered parent infant/child attachment related to:

1. Loss of image of ideal child
2. Child's physical condition that limits handling or fondling
3. Inability of parents to meet child's special needs

B. Risk for caregiver role strain
C. Family coping: potential for growth, related to child's ability and care
D. Decisional conflict related to:
    1. Need for medical therapies
    2. Proposed care for child
E. Risk for disorganized infant behavior related to:
    1. Pain
    2. Oral/motor problems
    3. Invasive procedures
F. Diversional activity deficit related to inadequate support systems to provide respite
G. Fatigue related to care requirements of child with special needs
H. Anticipatory grieving related to:
    1. Loss of image of ideal child
    2. Projected death of child
I. Altered parenting related to:
    1. Unrealistic expectations of child
    2. Knowledge deficit
J. Situational low self-esteem related to loss of image of ideal child
K. Spiritual distress related to decisions regarding conflicts over the cessation or continuation of treatment

The Infant

Growth and Development

A. 1 Month

1. Physical

a. Weight: gains about 150 to 210 g (5 to 7 oz) weekly during the first 6 months of life
b. Height: grows about 2.5 cm (1 inch) a month for the first 6 months of life
c. Head circumference: grows about 1.5 cm (1/2 inch) a month for the first 6 months of life

2. Motor

a. Assumes flexed position with pelvis high, but knees not under abdomen, when prone
b. Holds the head parallel with the body when suspended in prone position
c. Can turn the head from side to side when prone; lifts head momentarily from bed
d. Asymmetric posture dominates, such as tonic neck reflex
e. Primitive reflexes still present

3. Sensory

a. Follows a light to midline
b. Eye movements coordinated most of the time
c. Visual acuity 20/100 to 20/50

4. Socialization and vocalization

a. Watches face intently while being spoken to
b. Utters small, throaty sounds

B. 2 to 3 Months

1. Physical: posterior fontanel closed

2. Motor

a. Holds the head erect for a short time and can raise chest supported on the forearms
b. Bears some weight on legs when held in standing position
c. Actively holds rattle but will not reach for it
d. Grasp, tonic neck, and Moro reflexes are fading
e. Step or dance reflex disappears
f. Plays with fingers and hands

3. Sensory
   a. Follows a light to the periphery
   b. Has binocular coordination (vertical and horizontal vision)
   c. Listens to sounds

4. Socialization and vocalization
   a. Smiles in response to a person or object
   b. Laughs aloud and shows pleasure in making sounds
   c. Cries less

C. 4 to 5 Months

1. Physical
   a. Birth-weight doubles
   b. Drools because salivary glands are functioning but child does not have sufficient coordination to swallow saliva

2. Motor
   a. Balances the head well in a sitting position
   b. Can sit when the back is supported; knees will be flexed and back rounded
   c. Symmetric body position predominates
   d. Can sustain a portion of own weight when held in a standing position
   e. Reaches for and grasps an object with the whole hand
   f. Can carry hand or an object to the mouth at will
   g. Reaches for attractive objects but misjudges distances
   h. Can roll over from abdomen to back
   i. Lifts head and shoulders at a 90o angle when prone
   j. Primitive reflexes (e.g., grasp, tonic neck, and Moro) have disappeared
   k. Neurologic reflexes
      (1) Landau (from 6 to 8 months to 12 to 24 months): when infant is suspended in a horizontal prone position, the head is raised, legs and spine are extended
      (2) Parachute (7 to 9 months, persists indefinitely): when the infant is suspended in a horizontal prone position and suddenly thrust forward, hands and fingers extend forward as if to protect from falling

3. Sensory
   a. Recognizes familiar objects and people
   b. Has coupled eye movements; accommodation is developing

4. Socialization and vocalization
   a. Coos and gurgles when talked to
   b. Definitely enjoys social interaction with people
   c. Vocalizes displeasure when an object is taken away

D. 6 to 7 Months

1. Physical
   a. Weight: gains about 90 to 150 g (3 to 5 oz) weekly during second 6 months of life
   b. Height: grows about 1.25 cm (1/2 inch) a month
   c. Head circumference: grows about 0.5 cm (1/5 inch) a month
   d. Teething may begin with eruption of two lower central incisors, followed by upper incisors

2. Motor
   a. Can turn over equally well from stomach or back
   b. Sits fairly well unsupported, especially if placed in a forward leaning position
   c. Lifts head off table when supine
   d. Can transfer a toy from one hand to the other
   e. Can approach a toy and grasp it with one hand
   f. Plays with feet and puts them in mouth
   g. When lying down, lifts head as if trying to sit up
   h. Transfers everything from hand to mouth

3. **Sensory**
    a. Has taste preferences
    b. Will spit out disliked food
    c. Begins to recognize things are still present even though they cannot be seen
4. **Socialization and vocalization**
    a. Begins to differentiate between strange and familiar faces and shows "stranger anxiety"
    b. Makes polysyllabic vowel sounds
    c. Vocalizes "m-m-m-m" when crying
    d. Cries easily on slightest provocation but laughs just as quickly

E. 8 to 9 Months

1. **Motor**
    a. Sits steadily alone
    b. Has good hand-to-mouth coordination
    c. Developing pincer grasp, with preference for use of one hand over the other
    d. Crawls, may go backward at first
    e. Pulls self to standing position and stands holding onto furniture
2. **Sensory**
    a. Depth perception is increasing
    b. Displays interest in small objects
3. **Socialization and vocalization**
    a. Shows anxiety with strangers by turning or pushing away and crying
    b. Definite social attachment is evident: stretches out arms to loved ones
    c. Is voluntarily separating self from mother by desire to act on own
    d. Reacts to adult anger: cries when scolded
    e. Has imitative and repetitive speech, using vowels and consonants such as "Dada"
    f. No true words as yet, but comprehends words such as "byebye"
    g. Responds to own name

F. 10 to 12 Months

1. **Physical**
    a. Weight: birth-weight triples
    b. Height: birth-length increases by 50%
    c. Head and chest circumference are equal
    d. Upper and lower lateral incisors usually have erupted, for total of six to eight teeth
    e. Hematocrit: 29 to 41%
2. **Motor**
    a. Stands alone for short times
    b. Creeps (creeping is more advanced because the abdomen is supported off the floor)
    c. Walks with help: moves around by holding onto furniture
    d. Can sit down from a standing position without help
    e. Can eat from a spoon and a cup but needs help; prefers using fingers
    f. Can play pat-a-cake and peek-a-boo
    g. Can hold a crayon to make a mark on paper
    h. Helps in dressing, such as putting arm through sleeve
3. **Sensory**
    a. Visual acuity 20/50+
    b. Amblyopia may develop with lack of binocularity
    c. Discriminates simple geometric forms

4. **Socialization and vocalization**
    a. Shows emotions such as jealousy, affection, anger
    b. Enjoys familiar surroundings and will explore away from mother
    c. Fearful in strange situation or with strangers; clings to mother
    d. May develop habit of "security" blanket
    e. Can say two words besides Dada or Mama with meaning
    f. Understands simple verbal requests, such as, "Give it to me."

Play During Infancy (Solitary Play)

A. Safety is chief determinant in choosing toys (aspirating small objects is one cause of accidental death)
B. Mostly used for physical development
C. Toys need to be simple because of short attention span
D. Visual and auditory stimulation is important
E. Suggested toys
    1. Rattles
    2. Soft, stuffed toys
    3. Mobiles
    4. Push-pull toys
    5. Simple musical toys
    6. Strings of large beads
    7. Unbreakable mirrors
    8. Weighted or suction toys
    9. Squeeze toys
    10. Teething toys
    11. Books with textures
    12. Activity boxes
    13. Simple take-apart toys
    14. Nested boxes and fitting forms

Health Promotion During Infancy

Feeding Milestones

A. At birth the full-term infant has sucking, rooting, and swallowing reflexes
B. Newborn feels hunger and indicates desire for food by crying; expresses satiety by contentedly falling asleep
C. At 1 month the infant has strong extrusion reflex
D. By 5 to 6 months the infant can use fingers to eat teething cracker or toast
E. By 6 to 7 months the infant is developmentally ready to chew solids
F. By 8 to 9 months the infant can hold a spoon and play with it during feeding
G. By 9 months the infant can hold own bottle
H. By 12 months the child usually can drink from a cup, although fluid may spill and bottle may be preferred at times

Infant Nutrition

A. Nutrition as It Affects Growth

1. Birth weight usually doubled by 5 months of age and tripled by 1 year (small babies may gain more weight in a shorter period)
2. Growth during the first year should be charted to observe for comparable gain in length, weight, and head circumference
3. Generally, growth charts demonstrate the percentile of the child's growth rate (below the fifth and above the ninety-fifth percentile are considered abnormal)

4. Percentiles of growth curves must be seen in relation to:
   a. Deviation from a steady rate of growth
   b. Hereditary factors of parents (size and body shape)
   c. Comparison of height and weight
5. Satisfactory rate of growth judged by:
   a. Weight and length (overweight and underweight constitute malnutrition)
   b. Muscular development
   c. Tissue tone and turgor
   d. General appearance and activity level
   e. Amount of crying and needed sleep
   f. Presence or absence of illness
   g. Mental status and behavior in relation to norms for the age

B. Proper Feeding Essential To Growth and Development

1. General good nutrition that promotes growth but prevents overweight
2. Prevention of nutritional deficiencies
3. Prevention of gastrointestinal disturbances, such as vomiting or constipation
4. Establishment of good eating habits later in life
5. Consistency of foods should progress from liquid to semisoft to soft to solids as the dentition and jaw develop

Guidelines for Infant Feedings

A. Breast milk is the most desirable complete diet for the first 6 months but requires supplements of fluoride (regardless of the fluoride content of the local water supply), iron by 6 months, and vitamin D if the mother's supply is deficient or the infant is not exposed to frequent sunlight

B. Iron-fortified commercial formula is an acceptable alternative to breastfeeding; requires fluoride supplements in areas where the fluoride content of drinking water is below 0.3 ppm

C. Breast milk or commercial formula is recommended for the first year, but after this age the infant can be given homogenized vitamin D fortified whole milk; the use of milk with reduced fat content (skimmed or low fat) is not recommended because increased quantities of solids would be required to supply the caloric needs, leading to overfeeding, and the high solute load would place excessive demands on the immature kidneys; in addition, essential fatty acids are missing

D. Solids can be introduced by about 6 months; the first food is often commercially prepared iron-fortified infant cereals; rice is usually introduced first because of its low allergenic potential; infant cereals should be continued until 18 months of age

E. With the exception of infant cereals, the order of introducing other foods is variable; recommended sequence is weekly introduction of other foods such as fruits and vegetables, and then meats

F. First solid foods are strained, pureed, or finely mashed

G. Finger foods such as toast, teething cracker, raw fruit, or crisp cooked vegetables are introduced at 6 to 7 months

H. Chopped table food or commercially prepared junior foods can be started by 9 to 12 months

I. Fruit juices should be offered from a cup as early as possible to reduce development of nursing bottle caries

J. Method
   1. Feed when the baby is hungry, after a few sucks of breast milk or formula
   2. Introduce one food at a time, usually at intervals of 4 to 7 days, to allow for identification of food allergies
   3. Begin spoonfeeding by placing food on back of the tongue, because of the infant's natural tendency to thrust tongue forward

4. Use a small spoon with straight handle; begin with 1 or 2 teaspoons of food; gradually increase to a couple of tablespoons per feeding
5. As the amount of solid food increases, the quantity of milk needs to be decreased to approximately 900 ml (30 oz) daily to prevent overfeeding
6. Never introduce foods by mixing them with the formula in the bottle

K. Weaning
1. Giving up the bottle or breast for a cup is psychologically significant, because it requires the relinquishing of a major source of pleasure
2. Usually, readiness develops during second half of the first year because of:
   a. Pleasure from receiving food by a spoon
   b. Increasing desire for more freedom
   c. Acquiring more control over body and the environment
3. Weaning should be gradual, replacing only one bottle at a time with a cup and finally ending with the nighttime bottle
4. If breastfeeding must be terminated before 5 or 6 months of age, a bottle should be used to allow for the infant's continued sucking needs; after about 6 months wean directly to a cup

L. Diseases or conditions during infancy requiring possible dietary modifications
1. Diarrhea: decreased fat and carbohydrate
2. Constipation: increased fluids, add prune juice or strained fruit, change in type of carbohydrate
3. Celiac disease (malabsorption syndrome): results from gluten sensitivity; diet should be low in gluten, which is found in wheat, rye, barley, and oat grains, so these grains are eliminated and rice and corn are substituted
4. Allergy: individual diet modification according to specific food sensitivity; e.g., if milk allergy exists, substitute forms of soybean or meat formula preparations are used
5. Lactose intolerance: found in non-white races; lactose-free diet used with Nutramigen as a milk substitute

Immunizations

A. Types of Immunizations

1. Diphtheria, Pertussis, and Tetanus (Dpt)
   a. DPT given at 2, 4, 6 months; boosters given at 15 months and 5 years of age; Tripedia (DTaP) diphtheria, tetanus, and attenuated pertussis is used for the booster doses
   b. Diphtheria toxoid: effective for about 10 years; febrile reaction more commonly seen in older children, so the adult type tetanus and diphtheria (Td) toxoid is recommended every 10 years after the last booster at 5 years of age; Td is also used for any children over the age of 7 who have not been previously immunized
   c. Tetanus toxoid: nearly 100% effective; induces immunity for about 10 years; given at 5-year intervals in the event of a possibly contaminated wound; tetanus is characterized by severe muscle spasms and is potentially fatal
   d. Pertussis vaccine (vaccine of whole organism)
      (1) Started early since no passive immunity from mother exists, as with diphtheria and tetanus
      (2) Not given after the child's seventh birthday because risk of disease is less than vaccine's side effects

2. MEASLES, MUMPS, AND RUBELLA VACCINE (MMR)
   a. MMR vaccine (live attenuated vaccine): generally given at 12 months of age because of the presence of natural immunity from mother; a second dose should be administered at 4 or 5 years of age
   b. Not given to any unimmunized pregnant woman or if pregnancy is suspected because of potential infection of the fetus; pregnancy must be prevented until 3 months after immunization to eliminate danger to the fetus

c. If respiratory symptoms, a fever, Koplik's spots, or a skin rash are present, measles cannot be prevented by the administration of MMR (Koplik's spots occur on the buccal mucosa , rash appears on trunk and extremities in 24 to 48 hours
d. Mumps causes swelling of the parotid glands and may cause sterility in postpubescent males
e. Rubella given to children mainly to prevent occurrence of the disease in women during the first trimester of pregnancy; rubella (German measles) causes a maculopapular rash

3. Polio, Trivalent Oral Polio Vaccine (Topv)
a. Recommended for all children younger than 18 years of age
b. Infants receive 3 doses (given at 2, 4, and 6 months); fourth dose given at 5 years of age
c. Infants/children who are asymptomatic HIV positive or those with immune deficiencies and their siblings should receive inactivated polio vaccine (IPV)

4. HAEMOPHILUS INFLUENZAE TYPE B VACCINE (HIB)
a. Polysaccharide vaccine given at 2, 4, 6, and 15 months of age (can be given sooner if child is in high-risk category; e.g., child who attends day-care center, is asplenic, or has sickle cell anemia)
b. DPT can be given at same visit, but a different site should be used

5. HEPATITIS-B VACCINE (HEP-B)
a. Infants receive 3 doses (given at birth to 1 month, 4 months, and 9 months)
b. Must be given by IM injection
c. Can be given at same time as DPT but separate sites must be used

6. CHICKENPOX VACCINE (VARIVAX)
a. Children under 12 receive 1 dose
b. Teenagers and adults need 2 doses
c. Vaccine is 70% to 90% effective in preventing chickenpox and its sequelae, such as encephalitis and thrombocytopenia

B. Factors influencing administration of immunizations
1. The benefit from being protected by the immunization is believed to greatly outweigh the risk from the disease
2. Presence of maternal antibodies
3. Administration of blood transfusion or immune serum globulin within 3 months
4. High fever, serious illness (common cold is not a contraindication)
5. Diseases in which immunity is impaired
6. Immunosuppressive therapy in child or family member
7. Generalized malignancy such as leukemia
8. Anaphylactic reaction to egg protein
9. Neurologic problems such as convulsions during administration of pertussis vaccine
10. Allergic reaction to a previously administered vaccine or a substance in the vaccine such as preservatives or neomycin
11. Live virus vaccines are usually not given to any child with an altered immune system

Injury Prevention

A. Accidents are One of The Leading Causes of Death During Infancy
1. Mechanical suffocation causes most accidental deaths in children under 1 year of age
2. Aspiration of small objects and ingestion of poisonous substances occur most often during second half of the first year and into early childhood
3. Trauma from rolling off a bed or falling down stairs can occur at any time

B. Teaching is an essential aspect of prevention
1. Birth to 4 months
   a. Aspiration
      (1) Not as great a danger to this age group but should begin practicing safeguards early (refer to 4 to 7 months)
      (2) Inform parents of dangers from baby powder; encourage its proper use and storage if they insist on use

b. Suffocation
   (1) Keep all plastic bags stored away from infant's reach; discard large plastic garment bags after tying in a knot
   (2) Do not cover mattress or pillows with plastic
   (3) Use a firm mattress, no pillows, and loose blankets
   (4) Make sure crib design follows regulations and mattress fits snugly
   (5) Position crib away from other furniture
   (6) Do not tie pacifier on string around infant's neck
   (7) Remove bibs at bedtime
   (8) Keep crib away from other furniture and cords from window blinds
   (9) Drowning: never leave infant alone in bath

c. Falls
   (1) Always raise crib rails; tie rails to crib if malfunctioning
   (2) Never leave infant on a raised, unguarded surface
   (3) When in doubt about where to place child, use the floor
   (4) Restrain child in the infant seat and never leave unattended while the seat is resting on a raised surface
   (5) Avoid using a high chair until child is old enough to sit well

d. Poisoning
   Not as great a danger to this age group but should begin practicing safeguards early (refer to 4 to 7 months)

e. Burns
   (1) Check bath water and warmed formula and food
   (2) Do not pour hot liquids when infant is close by, such as sitting on lap
   (3) Beware of cigarette ashes that may fall on infant
   (4) Do not leave infant in the sun for more than a few minutes, use hats and sunscreens
   (5) Wash flame-retardant clothes according to label directions
   (6) Use cool mist vaporizers
   (7) Do not keep child in parked car
   (8) Check surface heat of car restraint

f. Motor vehicles
   (1) Transport infant (even newborn) in a specially constructed rear-facing car seat with appropriate restraints
   (2) Do not place infant on the seat or in the lap
   (3) Do not place a carriage or stroller behind a parked car

g. Bodily damage
   (1) Avoid sharp, jagged-edged objects
   (2) Keep diaper pins closed and away from infant

2. 4 to 7 Months

a. Aspiration
   (1) Keep buttons, beads, and other small objects out of infant's reach
   (2) Use pacifier with one-piece construction and loop handle
   (3) Keep floor free of any small objects
   (4) Do not feed infant hard candy, nuts, food with pits or seeds, or whole hot dogs
   (5) Inspect toys for removable parts
   (6) Avoid balloons as playthings

b. Suffocation
   May begin to teach swimming as part of water safety

c. Falls
   (1) Restrain in high chair
   (2) Keep crib rails raised to full height

d. Poisoning
   (1) Make sure that paint for furniture or toys does not contain lead
   (2) Place toxic substances on a high shelf and/or locked cabinet
   (3) Hang plants or place on a high surface rather than on floor
   (4) Avoid storing large quantities of cleaning fluids, paints, pesticides, and other toxic substances
   (5) Discard used containers of poisonous substances
   (6) Do not store toxic substances in food containers
   (7) Know telephone number of local poison control center
e. Burns
   (1) Always check bath water and adjust household hot-water temperature to 120o F (49o C) or lower
   (2) Place hot objects (cigarettes, candles, incense) on high surfaces
f. Motor vehicles (Refer to birth to 4 months)
g. Bodily damage
   (1) Give toys that are smooth and rounded, made of wood or plastic
   (2) Avoid long, pointed objects as toys

3. 8 to 12 Months

a. Aspiration (refer to 4 to 7 months)
b. Suffocation
   (1) Keep doors of ovens, dishwashers, refrigerators, and front-loading clothes washers and dryers closed at all times
   (2) If storing an unused appliance, such as a refrigerator, remove the door
   (3) Fence swimming pools; always supervise when near any source of water, such as cleaning buckets
   (4) Keep bathroom doors closed
c. Falls
   Fence stairways at top and bottom if child has access to either end
d. Poisoning
   (1) Administer medications as a drug, not as a candy
   (2) Do not administer adult medications unless prescribed by a physician
   (3) Replace medications and poisons immediately after use; replace caps properly if a child protector cap is used
   (4) Advise parents regarding proper use of syrup of ipecac if ordered
e. Burns
   (1) Place guards in front of any heating appliance, fireplace, or furnace
   (2) Keep electrical wires hidden or out of reach
   (3) Place plastic guards over electrical outlets; place furniture in front of outlets
   (4) Keep hanging tablecloths out of reach
   (5) Do not allow infant to play with electrical appliances
f. Motor vehicles
   (1) Do not use adult seat or shoulder belt without infant car seat
   (2) Do not allow infant to crawl behind a parked car
   (3) If infant plays in a yard, have the yard fenced or use a playpen
g. Bodily damage
   (1) Do not allow infant to use a fork for self-feeding
   (2) Use plastic cups or dishes
   (3) Check safety of toys and toybox
   (4) Protect from animals, especially dogs

Parental Guidance

A. First 6 Months

1. Understand each parent's adjustment to newborn, especially mother's postpartal emotional needs
2. Teach infant care and assist parents to understand infant's individual needs and temperament and that infant expresses wants through crying
3. Encourage parents to establish a schedule that meets the family's needs
4. Help parents understand infant's need for stimulation in environment
5. Support parent's pleasure in seeing child's growing friendliness and social response, especially smiling
6. Plan anticipatory guidance for safety
7. Stress need for immunization against disease
8. Prepare for introduction of solid foods

B. Second 6 Months

1. Prepare parents for child's "stranger anxiety"
2. Encourage parents to allow child to cling to mother or father and avoid long separation from either
3. Guide parents concerning discipline because of infant's increasing mobility
4. Teach accident prevention because of child's advancing motor skills and curiosity
5. Encourage parents to leave child with suitable parental substitute to allow some free time
6. Discuss readiness for weaning

Health Problems First Noted During Infancy

(Problems may continue past 12 months of age and through childhood)

HOSPITALIZATION

A. Reactions to parental separation (begins later in infancy: refer to the Toddler)
B. Infant recognizes pain but is not emotionally traumatized by intrusive procedures
C. General problems in care of the infant
   1. Small size
      a. Body warmth and temperature control
      b. Maintenance of fluids: prone to edema, dehydration, and electrolyte imbalance
         (1) Infants have a higher percentage of extracellular fluid than do adults, which can be quickly excreted
         (2) Infants' kidneys are unable to concentrate urine
   2. Immature organ systems
      a. Primary defense mechanisms just developing: loss of antibodies from fetal life increases the infant's susceptibility to infection
         (1) Antibody levels lowest at 6 weeks to 2 months of age; then infants begin to develop their own system
         (2) Problem subsides as infants grow older
      b. Blood vessels still developing; increased fragility causes hemorrhage
      c. Some essential enzymes (e.g., glucuronyl transferase, which is necessary for conjugation of bilirubin) still developing: more chance for jaundice and brain damage

General Nursing Diagnoses for Infants With Health Problems

A. Ineffective airway clearance related to:
   1. Accumulation of secretions
   2. Immobility
   3. Fatigue
B. Risk for altered parent infant/child attachment related to:
   1. Possible loss of child
   2. Child's physical condition that limits handling or fondling
   3. Inability of parents to meet child's health needs

C. Anxiety related to:
    1. Strange environment
    2. Perception of impending event
    3. Separation
    4. Anticipated discomfort
    5. Knowledge deficit
    6. Discomfort
    7. Difficulty breathing
    8. Feelings of powerlessness
D. Risk for aspiration related to:
    1. Disease process
    2. Impaired swallowing
E. Risk for disorganized infant behavior related to:
    1. Pain
    2. Intrusive procedures
    3. Separation from support systems
F. Interrupted breastfeeding related to:
    1. Mother-infant separation
    2. Inability of infant to suck
G. Risk for caregiver role strain related to:
    1. Inadequate support systems
    2. Family member illness
    3. Unfamiliarity with resources
H. Ineffective family coping: compromised, related to:
    1. Situational crisis
    2. Temporary family disorganization
I. Diversional activity deficit related to lack of sensory stimulation
J. Altered family processes related to:
    1. Situational crisis
    2. Knowledge deficit
    3. Temporary family disorganization
    4. Inadequate support systems
K. Fear related to:
    1. Separation from support systems
    2. Uncertain prognosis (parental)
    3. Perceived inability to control events (parental)
L. Risk for fluid volume deficit related to:
    1. Inability to concentrate urine
    2. Higher percentage of extracellular to intracellular water
M. Anticipatory grieving (parental) related to:
    1. Expected loss
    2. Gravity of infant's physical status
N. Risk for infection related to:
    1. Immature immune system
    2. Impaired skin integrity
    3. Presence of infective organisms
O. Risk for injury related to:
    1. Use of specific therapies and appliances
    2. Incapacity for self-protection
    3. Immobility

P. Knowledge deficit related to anxiety
Q. Pain related to:
    1. Disease process
    2. Interventions
R. Altered parenting related to:
    1. Separation
    2. Skill deficit
    3. Family stress
    4. Knowledge deficit
    5. Interrupted parent-infant bonding
S. Powerlessness related to health care environment
T. Sensory perceptual alteration: tactile related to protective environment
U. Risk for impaired skin integrity related to:
    1. Immature structure and function
    2. Immobility
V. Sleep-pattern disturbance related to:
    1. Excessive crying
    2. Frequent assessment
    3. Therapies
    4. Interventions
    5. Fear of child's prognosis
W. Spiritual distress (parental) related to:
    1. Inadequate support systems
    2. Challenged belief and value system because of moral/ethical implications of therapy

Chromosomal Aberrations

General Nursing Care of Infants and Children with Chromosomal Aberrations

A. Assessment
    1. Identify chromosomal abnormality
    2. Determine functional limitations
    3. Parental perceptions of child
    4. Child's health status

B. Analysis/Nursing Diagnoses
    1. Ineffective airway clearance related to:
        a. Nasal obstruction
        b. Excessive thick secretions
        c. Impaired musculature
    2. Risk for aspiration related to:
        a. Impaired swallowing
        b. Nasogastric tube feedings
        c. Impaired gag reflex
    3. Body image disturbance related to:
        a. Unrealistic self-expectations
        b. Sterility (Turner's and Klinefelter's syndromes)
        c. Lack of pubertal changes (Turner's and Klinefelter's syndromes)
    4. Impaired verbal communication related to cognitive impairment
    5. Fear related to hospitalization
    6. Knowledge deficit related to cognitive or sensory impairment
    7. Altered nutrition: potential for more than body requirements related to immobility