Developmental Concepts

Conception thru Old Age:
Growth and Development

Growth and development

- Function of: G/E=P
- Must consider: physical, intellectual, emotional, spiritual, and environmental dimensions of man
- Development occurs from cephalo to caudal (top to bottom)
- Is sequential, predictable
- Variation in terms of timetable, but not milestones
Major Classifications of Developmental Stages

- Prenatal
- Neonate
- Infant
- Toddler
- Preschool
- School age
- Adolescent
- Young adult
- Middle adult
- Later adult
- Old
- Very old

Effects of illness on developmental stages:

- Alteration: (i.e., Teratogenic effects of thalidomide)
- Retardation: failure to mature
- Regression: adolescent begins to act like a child
- Motivate to mature quicker
- Stressor (+ or -)

Prenatal Period

- Maternal environment is environment of the fetus
  - Paternal contribution (sperm) also contributes
  - Nutrition
  - Environment (air, water, sound)
  - Physiological: general health which influences circulation to the uterus, and nutrients/toxins delivered to the fetus.
    - Definite stressors to fetus: recreational drugs, alcohol, smoking
  - Evaluation of fetus: mother, lab and imaging studies.
  - Maternal paternal education extremely important
Neonate: birth to 28 days

Apgar Score: done @ 1 min and 5 min.

<table>
<thead>
<tr>
<th>Category</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate</td>
<td>Absent</td>
<td>Slow, &lt;100</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>Resp effort</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>Flaccid</td>
<td>Some flexion of extremities</td>
<td>Active motion</td>
</tr>
<tr>
<td>Reflex irritability</td>
<td>No response</td>
<td>Weak cry, grimace</td>
<td>Vigorous cry</td>
</tr>
<tr>
<td>Color</td>
<td>Blue, pale</td>
<td>Body pink, extremities blue</td>
<td>Completely pink</td>
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</tbody>
</table>

Potential problems of Neonates

- Respiratory: > with prematurity and C-section
- Congenital anomalies
- ABO incompatibility / jaundice
- Birth trauma
- Low birth weight (LBW)
- Fetal alcohol syndrome
- Drug addiction (r/t maternal drug abuse)
- Risk for child abuse

Infant (1 – 12 months)

- Enormous amount of growth and development takes place during first year of life:
  - Monitor for accomplishment of milestones: physiological, motor/coordination, emotional/psychological, social, intellectual
  - Denver Developmental Screening Test (DDST): monitors atypical developmental patterns in infants and children.
    - Cognitive milestones
    - Language
    - Social and emotional
    - Gross motor
    - Self help
Common Health Problems

- Colic
- Child abuse: neglect, battering syndrome, shaken baby syndrome, Munchausen syndrome
- Failure to Thrive
- SIDS

Prevention:

- Patient education: milestones, problem detection, health promotion, family social support systems
- Preventive services: immunizations
- Screening for early disease/problem detection

Immunization Schedule

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Birth</th>
<th>14 mos</th>
<th>15 mos</th>
<th>18 mos</th>
<th>2 mos</th>
<th>4 mos</th>
<th>6 mos</th>
<th>12 mos</th>
<th>16 mos</th>
<th>18 mos</th>
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<tr>
<td>Hep B</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D/T/IP</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hib Influenza</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polio</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MMR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
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</table>
Immunizations

Only 2/3 of America’s children are fully immunized!

Preschooler: 3-6 yrs

Most Prevalent Health Problems/Issues:
- Lack of early health promotion education
- Lack of preventive services: screening, education, immunizations
- Infectious disease, (respiratory tract)
- Accidents
- Child abuse
- Developmental delays may surface

School Aged Child: 6-12 years

- Generally healthy population
- Developing motor, cognitive and social skills
- Susceptible to environmental surroundings: social, physical and psychological level:
  - Housing, air, water, environmental toxins/pollutants, crime, child abuse, substance abuse, etc.
Adolescent and Young Adult 13 – 20, and 21 - 30

- Marked physical (hormonal changes)
- Cognitive and psycho-social changes/adjustments
- Culturally / socially influenced
- Extremely susceptible to the influence of social environment

Health Problems Common to this Group:

- Accidents / violence
- Substance abuse
- Suicide
- Pregnancy (is a problem for teen, or unmarried young adult)
- Nutritional problems
- STD’s
- Lifestyle adopted can be precursor to chronic problems

Aging Adult: Middle Adult 30 - 65

- Physiological changes r/t “aging”, as opposed to “growing” begin:
  - Fatty tissue redistributed
  - Skin drier
  - Wrinkles
  - Gray hair
  - CO begins to decrease
  - Muscle mass/tone decreases
  - Chronic degenerative changes appear: osteoporosis, HTN, hearing, visual changes, hormonal changes
  - Fruits of previous lifestyle are beginning to be harvested!!
Common Health Problems

- Group dependent:
  - MVA
  - Chronic Illness (common): CV, Pulmonary, Ca, DM, Obesity, Alcoholism, Depression

Older Adult: (over 60)

- Young old: 60 – 74, middle old: 75 – 84, old-old: 85 and older.
- Growing population: by 2035: 85 million over 65 (currently 36 million)
- Gerontology: study of older adult
- Significant physiological and socio/psychological changes
- VULNERABLE group

Physiological Changes

- General: (of course variable for individual)
- Integumentary (thin, dry, loss of elasticity)
- Musculoskeletal (loss of muscle mass)
- Neurological (sensory motor changes) (dementia/Alzheimers)
- Senses (may be diminished)
- CV (hardening of arteries)
- GI (decreased peristalsis)
- Dentition
- GU (GFR decreases by 50%)
Determinants of Health
Factors which influence health (esp. in Adult Pop)

<table>
<thead>
<tr>
<th>Access to Care (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics (20%)</td>
</tr>
<tr>
<td>Environment (20%)</td>
</tr>
<tr>
<td>Health Behaviors (50%)</td>
</tr>
</tbody>
</table>

Social Economic Vulnerabilities

- Families move away: loss of support
- Friends die: loneliness, lack of peers
- Economic burden: health care is expensive, increased resources utilized (MCR does not cover a lot of things)
- Retirement income may be low

Communication

It's not so much what you say, but how you say it!!!!
Who does a nurse have to communicate with to provide good care?
- Everyone!!!
  - Patient
  - Family
  - Peers
  - Other providers
  - Community as a whole
  - ______
  - ______

Communication Issues
- Verbal/non-verbal language communicating
- How you dress, conduct oneself
- Cultural factors
- Predominate Language issues / translation issues
- Therapeutic communication
- "through the eyes of the patient"
- Humor / touch / empathy / non-judgmental attitude / listening skills

Patient Education: promoting lifestyle changes
Use stages of education:
- Pre-contemplation
- Contemplation
- Action
- Maintenance
- Relapse
Adherence Issues (Non-compliance)

- Relationship with provider results in best adherence to health care regime
- Regime must be acceptable to the patient
- Must be easy enough (realistic for the patient) to follow
- Health Belief Model: (Rosenstock)

CHANGE

- No one likes to change!!!
- Lewin’s Theory of Change: Unfreeze, Change, Re-freeze
- Easier to have people join you, almost impossible to impose change
- Leader: able to get people to want to change

VITAL SIGNS

- Temperature, Pulse, B/P, Respiration (age dependent)
- Oxygen saturation now called the “fifth vital sign”
- Skin vitals: color, temperature, moisture
Temperature

- Normal range 98 – 99 F.
- Thermoregulation: extremes of age have potential problems with
- Methods: oral, axillary, rectal, tympanic
- Many thermometer devices: glass, electronic, tympanic, temp a dot, temp a strip, electronic probe, skin probe

Temperature Terms

- Afebrile / normo thermic
- Pyrexia / febrile / hyper pyrexia / hyperthermia
- Hypothermia
- Fever patterns:
  - Intermittent: fluctuates between febrile and afebrile
  - Remittent: fluctuates between febrile and low grade fever
  - Constant: febrile with no or little fluctuation
  - Relapsing: febrile, afebrile for one day, then febrile again
  - Crisis: sudden drop to afebrile (sweating, or the flush)
  - Lysis: gradual return to afebrile state

Taking a temperature

- Inaccurate information is dangerous
- Use equipment appropriate for the age, and situation, and purpose
  - Tympanic good for screening, need to perform quickly (not for young children)
  - Oral and rectal most accurate
  - Axillary: crude screening to ID very high temp
  - Patients with a fever need to have temp taken at a MINIMUM of Q4 hrs, or more frequently if anti-pyretic drugs were given
  - Fever curves: frequently assist with diagnosis of disease
Methods to maintain thermo regulation

- Radiation
- Convection
- Evaporation
- Conduction

Blood Pressure

MAP = HR X PVR X VOL

Stroke volume (SV): Quantity of blood eject with each contraction (70 ml in adult)

Cardiac Output (CO): quantity of blood circulated (SV X HR)

Pulse Pressure: difference between Systolic and Diastolic (narrowing or widening significant)
Accurate B/P
- Correct size B/P cuff (six sizes) Newborn thru Thigh
- Eye level
- Palpate pulse, pump up until 30 mm hg. Over obliteration of pulse

Some Key Points
- Infection control issues
- Monitor B/P trend, it tells you something
- Don’t take B/P in arm with the IV
- NO B/P on affected side for CVA or mastectomy
- Several measurements have to be taken to define HTN
- Extremely elevated B/P is lowered gradually, however, very low B/P is treated STAT

Pulse
- Age specific for normal range

<table>
<thead>
<tr>
<th></th>
<th>0 – 28 days</th>
<th>1 – 2 yrs.</th>
<th>2 – 6 yrs.</th>
<th>6 – 12 yrs.</th>
<th>&gt; 12 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>infant</td>
<td>80 - 140</td>
<td>80 - 130</td>
<td>75 - 120</td>
<td>75 - 110</td>
<td>60 - 100</td>
</tr>
<tr>
<td></td>
<td>120 - 160</td>
<td>110</td>
<td>100</td>
<td>95</td>
<td>80</td>
</tr>
</tbody>
</table>
Pulse: note the …
Rate, Rhythm, Quality

- Can’t get all information from a machine!!!
- Tachycardia > 100 (adult)
- Bradycardia < 60 (adult)
- Rhythm: regular, irregular, (dysrhythmia)
- Amplitude: absent (0), thready (1), weak (2), normal (3), bounding (4)

Locations of Pulses

- Temporal
- Carotid (need a systolic of 40 --never feel both at the same time)
- Brachial
- Radial (need a systolic of 80)
- Femoral (need a systolic of 60)
- Popliteal
- Dorasalis pedis
- Posterior tibial

Using Digital Electronic Technology to Assess V/S

- Always correlate to manual, to establish accuracy. (separates the good nurses from the EXCELLENT ones!)

- Lay your hands on the patient to do the initial assessment – do not rely only on digital numbers: LOOK at the PATIENT!!
Skin Vital Signs

- Temperature
- Color
- Moisture

Should be: warm, pink and dry.
Abnormal: cold or hot; white, grey, blue or flushed; moist

O2 Saturation Monitoring

- Considered the fifth vital sign
- Normal range: 96% or above.
- Monitored transdermally
- Early sign of distress