Michigan State University
College of Nursing

NUR 307

Concepts of Nursing Care
of Children and Their Families

Course Syllabus:
Required on Campus
Section 1

Course Faculty:
Mary Kisting, RN, MS
Linda Spence, RN, PhD

Fall, 2001
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NUR 307
OVERVIEW

COURSE DESCRIPTION

NUR 307 is designed to acquaint the student with the nursing care of infants and children within the framework of normal physical, cognitive, and psychosocial development. Nursing care is viewed as well-child health supervision, ambulatory child health care and care of the child in the acute care setting.

NUR 307 assists the student in developing a concept of family-centered care from infancy to adolescence. The course focuses upon the care of the child during health and illness. Emphasis is placed upon planning, administering and evaluating nursing care based upon the developmental needs of the child, and the problems confronting him and his family within their cultural, ethical and social structure. The most common medical-surgical problems of each age group are considered; integrating nutritional, psychological, pharmacological, teaching-learning, habilitational and rehabilitational aspects throughout the course. Clinical experience is provided concurrently within a pediatric setting.

COURSE OBJECTIVES

At the completion of NUR 307, the student will be able to:

1. Describe the family centered approach to the care of children and their families.

2. Describe the child's response to health/health care, illness and hospitalization using a holistic model.

3. Examine medical, nursing, ethical, cultural, and legal issues that impact the health care of children.

4. Identify appropriate nursing interventions for health promotion, disease prevention, and illness management for children across the developmental continuum.

5. Identify safety and health promotion issues that impact children and their families.

6. Demonstrate an understanding of the home, ambulatory, and hospital nursing care of children throughout the developmental continuum.

INSTRUCTIONAL MODEL

Lecture format and collaborative prospects with supportive readings. **STUDENTS ARE EXPECTED TO HAVE READ ASSIGNED READINGS PRIOR TO CLASS.**
GRADING

The student's course grade will be determined as follows.

<table>
<thead>
<tr>
<th>Examination</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination #1</td>
<td>25 percent</td>
</tr>
<tr>
<td>Examination #2</td>
<td>25 percent</td>
</tr>
<tr>
<td>Final Examination</td>
<td>50 percent</td>
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</tbody>
</table>

EXAMINATIONS

Three examinations will be given, two one-hour examinations and a cumulative final examination. Students will be held responsible for material discussed in class, information from prior courses, and assigned readings.

All students are expected to take the exams at the designated date unless PRIOR arrangements are made with the course chairperson. If not able to contact her call the College of Nursing office (355-6523) immediately and leave a message regarding the reason for absence. It will be your responsibility to reach the faculty as soon as possible following the administration of the exam. At the time of contact, a health provider’s statement will be requested for an illness excuse. Arrangements to take the exam must be made with the faculty member at the time she is notified of the reason for the delay.

Students who make alternate arrangements to take the exam may be given a different exam which may include essay questions. No grade alterations will be made later than two (2) weeks after the exam date.

POLICY OF UNANNOUNCED QUIZZES:

Unannounced quizzes may be given at any time during the class period.

When a quiz is given, the points will count toward the NEXT scheduled examination.

EXAMPLE:

<table>
<thead>
<tr>
<th>Total Possible Points</th>
<th>Your Score</th>
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<tbody>
<tr>
<td>Quiz on 9-13-01</td>
<td>3 points</td>
</tr>
<tr>
<td>Quiz on 9-27-01</td>
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</tr>
<tr>
<td>Examination #1</td>
<td>65 points</td>
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</tbody>
</table>

Total possible for Exam #1: 73 points

67 points for exam #1

Make up quizzes will only be administered in case of personal or immediate family illness. A health providers statement may be requested.
GRADING CRITERION

The following grading system will be used to determine course grades. For conversion purposes, the student should use the following scale:

<table>
<thead>
<tr>
<th>PERCENTAGE (%)</th>
<th>GRADE POINT</th>
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<tbody>
<tr>
<td>94-100</td>
<td>4.0</td>
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<tr>
<td>85-93</td>
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<td>80-84</td>
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<td>75-79</td>
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<td>65-69</td>
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<tr>
<td>60-64</td>
<td>1.0</td>
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</table>

STUDENT-FACULTY CONFERENCES

Feel free to make an appointment with course faculty to discuss your performance, or clarify course content. They may be contacted before or after class, or by leaving a message in the College of Nursing office (A-230 Life Sciences).

MANDATORY CLASS ATTENDANCE

Nursing is a professional program and classroom attendance is an expectation.

*Roll will be taken at each **CLASS** and you will be penalized if you DO NOT attend class.

For each 3 classes missed, the final grade will be decreased by .5.

EXAMPLES:

<table>
<thead>
<tr>
<th>ABSENCES</th>
<th>GRADE</th>
<th>FINAL GRADE</th>
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<tbody>
<tr>
<td>03</td>
<td>3.0</td>
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<tr>
<td>06</td>
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<tr>
<td>09</td>
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</tr>
<tr>
<td>12</td>
<td>3.0</td>
<td>1.0</td>
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</tbody>
</table>

**CLASS** is defined as the entire period of time from 1:00 pm - 2:50 pm.

*Roll = Each student must assume personal responsibility for making certain that they sign the list. If your signature is NOT on the list you will be marked absent.

Failure in NUR 307 will occur if anyone is caught forging a signature.
ACADEMIC DISHONESTY POLICY

Michigan State University adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades, and in the all-University Policy on Integrity of Scholarship and Grades, which are included in Spartan Life: 1998 Student and Handbook and Resource Guide and on the MSU Web site.

Academic dishonesty in ANY FORM will NOT be tolerated. Any student involved in academic dishonesty will be reported to the Student Affairs Committee and a grade of 0.0 will be issued for the course.

REMINDER:

RIGHTS AND RESPONSIBILITIES OF THE STUDENT 2.3.5. The student’s behavior in the classroom shall be conducive to the teaching and learning process for all concerned. (SPARTAN LIFE).

REQUIRED TEXTS


COURSE FACULTY  OFFICE NO.  OFFICE PHONE  CON

Mary a. Kisting, RN, MS (email: kisting@msu.edu)  A115 Life Sciences  355-6523

Linda Spence, RN, PhD (email: lindas@msu.edu)  A102 Life Sciences  353-8684
# Course Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Content</th>
<th>Faculty</th>
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</thead>
<tbody>
<tr>
<td>August 30, 2001</td>
<td>Course introduction Child Health Care Concepts</td>
<td>M. Kisting</td>
</tr>
<tr>
<td>September 6, 2001</td>
<td>Alterations in Oxygenation - Respiratory</td>
<td>M. Kisting</td>
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<tr>
<td>September 13, 2001</td>
<td>Alterations in Oxygenation – Respiratory</td>
<td>M. Kisting</td>
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<tr>
<td>September 20, 2001</td>
<td>Alterations in Oxygenation – Respiratory and Cardiac</td>
<td>L. Spence</td>
</tr>
<tr>
<td>September 27, 2001</td>
<td>Alterations in Oxygenation – Cardiac</td>
<td>M. Kisting</td>
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<tr>
<td>October 4, 2001</td>
<td>Exam I</td>
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<tr>
<td>October 11, 2001</td>
<td>Alterations in Elimination – Renal And Gastrointestinal</td>
<td>M. Kisting</td>
</tr>
<tr>
<td>October 18, 2001</td>
<td>Alterations in Mobility/Musculoskeletal</td>
<td>M. Kisting</td>
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<tr>
<td>October 25, 2001</td>
<td>Chronic Illnesses</td>
<td>L. Spence</td>
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<tr>
<td>November 1, 2001</td>
<td>Chronic Illnesses and the Dying Child</td>
<td>L. Spence</td>
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<tr>
<td>November 8, 2001</td>
<td>Exam II</td>
<td>M. Kisting</td>
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<td>November 15, 2001</td>
<td>Alterations in Regulatory – Endocrine</td>
<td>M. Kisting</td>
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<td>November 22, 2001</td>
<td>Thanksgiving</td>
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<tr>
<td>November 29, 2001</td>
<td>Alterations in Neuro/Trauma -- Child Maltreatment</td>
<td>M. Kisting</td>
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<td>December 6, 2001</td>
<td>Alterations in Neuro/Sensory</td>
<td>M. Kisting</td>
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<tr>
<td>December 10-14, 2001</td>
<td>Final exams</td>
<td></td>
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</table>
UNIT:  CHILD HEALTH CARE CONCEPTS

OBJECTIVES:

At the completion of this unit the student will be able to:

1. Compare the physical assessment of the child to the adult.
2. Describe the social, cultural, and religious influences on child health care.
3. Identify the nurse's role in caring for children and families.
4. Describe the family influences on child health care.
5. Identify developmental milestones of the infant, toddler, pre-schooler, school-age child, and adolescent.
6. Determine appropriate communication strategies to be utilized by the nurse in caring for the infant, toddler, pre-schooler, school-age child and adolescent.
7. Identify appropriate nursing care strategies based upon the developmental levels of infants, children and adolescents.
8. Identify the role of feeding and nutrition for the physical and psycho-social health of children.

REQUIRED READINGS:

Unit: ALTERATIONS IN OXYGENATION – RESPIRATORY & CARDIAC

Objectives:
At the completion of this unit students will be able to:

1. Describe the differences between cyanotic and cyanotic heart defects.

2. Identify the clinical manifestations of congenital heart disease in children.

3. Develop a nursing management plan of care for both the child with a congenital heart defect and his/her family.

4. Identify key history and physical assessment skills needed to assess respiratory function.

5. Identify the clinical manifestations and nursing management plan for a child with an acute respiratory infection.

Required Readings:


Special Attention To:

A. Respiratory Dysfunction:


   - Acute Viral Naso Pharyngitis
   - Acute Streptococcal Pharyngitis
   - Tonsillitis
   - Otitis Media


4. Infection Lower Airways - 841-843.


8. Asthma (see article above)

(continued on next page)
B. Cardio Vascular Dysfunction -
   1. Assessment of Cardiac Function - pp. 933-936.
   2. Congenital Heart Disease - pp. 936-949.
   3. Clinical Consequences of Congenital Heart Disease - pp. 949-959.
   4. Nursing Care of the Family and Child with Congenital Heart Disease - pp. 960-965.

REQUIRED MEDIA

WHEN: Prior to the class on Thursday, September 6, 2001.

TITLE: Assessment of Respiratory Distress in Infants and Children

LENGTH: 20 Minutes

REVIEW: This video describes how to perform a respiratory assessment of infants and children with mild, moderate, and severe distress. It defines respiratory distress and failure and explains the physical differences between the pediatric and adult respiratory systems. It also shows several babies in mild, moderate, and severe distress. Demonstrates abnormal signs of distress, including stridor, wheezing, grunting and retractions. Reviews assessment in 4 parts: Level of consciousness, respiratory rate, efforts and mechanics of respiration, and evaluation of skin and mucous membranes.

HINT: Examination questions will be taken from this video.
Pathogenesis of Asthma

Infection
Irritants
Allergens
Cold
Stress
Exercise

↓

IgE-mast cell-mediated
immune (Antigen-Antibody) response

↓

Release of biochemical mediators from MAST cells in
bronchial epithelium

Histamine
SRS-A
Eosinophilic Chemo
taxic Factor
Platelet Activating Factor

Asthma Attack:
1. Inflammation
2. Bronchospasm

↓

Obstruction of Large and Small Air Ways
Air Trapping
Air Hunger
Hyperventilation
Respiratory Acidosis
Hypoxemia
ASTHMA

**INDICATIONS OF SEVERITY**

1. Disturbance of consciousness
2. Central cyanosis
3. Sternocleidomastoid retractions
4. HR > 130 (older children)
5. Pulsus Paradoxus
6. Gross overinflation (x-ray)
7. $P_aO_2 < 60$ mmHg
8. $P_aCO_2 > 40$ mmHg
9. EKG abnormalities
10. Pneumothorax and/or pneumomediastinum

**SIGNS/SYMPTOMS IMPENDING DEATH**

**MALADAPTATION**

1. Change in level of consciousness
2. Obvious exhaustion
3. Silent chest
4. $CO$ retention
5. $FEV < .5$ L
   $FCV < 1.0$ L
6. Pneumothorax
   Pneumomediastinum
UNIT: ALTERATIONS IN ELIMINATION – RENAL & GASTROINTESTINAL

OBJECTIVES:

At the completion of this unit the student will be able to:

1. Describe the components of a comprehensive assessment of a child and his/her family with alterations in elimination.

2. Discuss the relationship of fluid and electrolyte balance in relation to acute gastroenteritis.

3. Identify the clinical manifestations and nursing considerations of the child with acute gastroenteritis.

4. Identify the clinical manifestations and nursing considerations of the child with malabsorption, obstruction and inflammation.

5. Identify the clinical manifestations and nursing considerations of the child with UTI, nephrotic syndrome, acute glomerulonephritis and hydronephrosis.

6. Develop appropriate nursing care plans (including specific nursing and client actions) for children and their families with alterations in elimination.

REQUIRED READINGS:


REVIEW:

Acid-base imbalances. (Pathophysiology)

SPECIAL ATTENTION TO:

Renal System:

Urinary tract disorders, pp. 1034-104
Nephrosis (Nephrotic syndrome), pp. 1043-1046
Acute glomerulonephritis, pp. 1046-1048
Wilm’s Tumor, pp. 1048-1050

Gastrointestinal System:

Gastroenteritis, pp. 883-891
Hypertrophic pyloric stenosis (HPS), pp. 921-923
Hirschsprung Disease, pp. 893-895
Celiac Disease, 926-928
Intussusception, pp 923-924
Gastroesophageal Reflux Disease (GERD), pp. 896-897
Pathophysiology of Poststreptococcal Acute Glomerulonephritis

Streptococcal Infection

Antigen-Antibody Reaction

Formation of immune complexes which become entrapped in glomerular membrane

↑ Vasopressor Activity

Glomerular Proliferation and Damage

↓ GRF

Retention of Na+ and H₂O

Proteinuria Hematuria Casts

↓ Hypertension

↑ ECF

Edema

Generalized Capillary Damage

Vasospasm

Retention of Na+ and H₂O

Hypertension

Edema

Vasospasm

↓ GRF

Proteinuria Hematuria Casts

↑ ECF
# COMPARISON MCNS AND ACUTE POST STREPTOCOCCAL GLOMERULONEPHRITIS

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<td><strong>Etiology</strong></td>
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<td>Streptococcal Infection</td>
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<td>glomerular membrane changes</td>
<td>autoimmune mem. changes</td>
</tr>
<tr>
<td><strong>GRF</strong></td>
<td>N</td>
<td>↓</td>
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<tr>
<td><strong>Proteinuria</strong></td>
<td>Massive</td>
<td>Moderate</td>
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<tr>
<td><strong>Hematuria</strong></td>
<td>Rare</td>
<td>Gross</td>
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<tr>
<td><strong>Fluid Volume</strong></td>
<td>Hypovolemia (Fluid ➔ interstitial)</td>
<td>Hypervolemia (Fluid remains intravascular)</td>
</tr>
<tr>
<td><strong>BP</strong></td>
<td>N - ↓</td>
<td>↑BP</td>
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<tr>
<td><strong>Edema</strong></td>
<td>Pronounced</td>
<td>Usually</td>
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<tr>
<td></td>
<td>Systemic</td>
<td>Face</td>
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UNIT: ALTERATIONS IN MOBILITY -- MUSCULOSKELETAL

OBJECTIVES:

At the completion of this unit the student will be able to:

1. Describe the nursing assessment and identification of diagnoses for a child with a musculoskeletal dysfunction.
   a. Osteomyelitis
   b. Septic arthritis
   c. Fractures
   d. Club foot
   e. Congenital dislocated hip
   f. Legg-calve - Perthes Disease
   g. Slipped femoral capital epiphysis
   h. Scoliosis
   i. Duchenne Muscular Dystrophy

2. Describe the nursing management of children immobilized by casts, traction, or braces.

3. Describe nursing interventions used to prevent skin break down, control infection and complications, control neurologic and circulatory compromise, prevent complications from appliances and apparatus, and control pain.

4. Describe the developmental, emotional and health maintenance needs related to the child with interferences of mobility.

REQUIRED READINGS:

PRINCIPLES OF TRACTION

I. Definition:

A pull exerted manually or with mechanical devices.

II. Purposes:

A. To reduce muscle spasm, i.e., fractures, back strain.
B. To immobilize—fractures, tuberculosis, etc.
C. To reduce fractures.
4. To maintain the length and position of an extremity by continuous pull until healing has progressed to the point where the fragments cannot change position. (In some cases, traction is used until muscle spasm has been relieved so that the fragments can be realigned and placed in some other type of fixation.)
E. To correct or prevent development of deformities, i.e., scoliosis.

III. Types of traction:

A. Manual traction:

Definition: A pull exerted with hands.

1. In the reduction of fractures.
2. By the surgeon or his assistant to maintain a steady pull on the limb while mechanical traction is released for adjustment.

Points to remember.

1. Manual traction must be done with a smooth firm grip.
2. Avoid any sudden jerky motions of the limb since this causes severe pain.
3. Never use manual traction without specific orders to do so.

B. Mechanical traction:

1. Skin traction (non-operative):
   a. Traction applied to the skin (therefore, indirectly on the skeleton).
      (1) On extremities with traction strips (sponge rubber or moleskin) fastened with stockinette or woven bandage.
      (2) On the cervical spine with head halters of various types.
      (3) On the pelvis with pelvic sling (for fracture of the pelvis) or with a pelvic belt (for low back pain).
   b. Skin traction may be contraindicated for clients who have circulatory disturbances, dermatitis, varicose veins. May be unsafe for clients with diabetes.
2. Skeletal traction (operative):
   a. Traction applied directly to the bone by means of pins or wires passed through the bone, or tongs anchored in the skull. (Most effective type of traction.)
   b. The most common means of skeletal traction on the extremities are:
      (1) The Kirschner wire which is smallest in diameter and creates negligible disturbance to the bone. Because of its small diameter, the wire must be held rigid with the Kirschner bow which also serves as the attachment to the traction.
      (2) The Steinmann pin, which, because of its greater diameter, is able to maintain its own rigidity.
   c. Other types: crutchfield tongs, halo traction.
   d. Care of mechanical traction equipment.
      (1) Be sure the ends of the pins are covered with cork or adhesive.
      (2) Allow no dressings around the wires unless ordered.

3. Types of pull in extremity traction.
   a. Straight or running.
      (1) This provides a pull upon the affected part but no balanced support. The pull is against the weight of the body and its friction upon the bed.
      Examples: Arm traction
                  Buck's extension
                  Bryant's traction
                  1. under 2 years of age who weigh less than 35 lb.
                  2. buttocks raised slightly off of bed
                  3. both legs always suspended
   b. Balanced traction:
      (1) This provides a running traction plus a balanced or counter-traction.
      Examples: Thomas splint with or without Pearson attachment
                 Russell traction on lower extremity (for hip or femur)
                 Dunlop traction on upper extremity (for elbow)
                 Any hammock or splint traction

C. Plaster traction.

1. Skeletal traction applied by incorporating the ends of the Steinmann pins or Kirschner wires in a cast.
   a. This provides a threefold advantage.
      (1) It maintains the position of the extremity.
      (2) It provides a fixed traction.
      (3) It allows the patient to move about.

2. Scoliosis jackets.
   a. "Shift" jacket--a body case applied to hold a growing child so that his growth process will tend to decrease the spinal curvature rather than increase it.
   b. Turnbuckle jackets that allow adjustment to exert pressure for the correction of deformities.

3. Hyperextension casts:
   a. Applied to hyperextend the spine after a compression fracture. This type of fixation allows the patient to be ambulatory.
IV. Principles of traction:

A. Position of the client--dorsal.
B. Counter traction.
   1. Elevate foot of bed.
   2. Pull client away from foot of bed.
   3. Footplate never come in contact with foot of bed.
C. Friction--none.
D. Continuous.
E. Straight line of pull

V. General care of traction client:

A. Maintain alignment.
   1. Of injured part.
   2. Of body.
B. Learn to care for the client without being tempted to disturb the traction.
   1. Never lift the weights to adjust the bed or the traction.
   2. Never remove weights from client with fracture except when doing number 3
      (below).
   3. If you have permission to make adjustments, see that manual traction is used to
      maintain the pull while the adjustments are made.
C. Traction must be maintained at maximum efficiency 24 hours a day, unless otherwise
   ordered.
   1. Exceptions to the 24-hour a day rule for traction:
      a. Traction applied to relieve the pain of muscle spasm, associated with low back
         pain.
      b. Traction applied to arthritis clients to prevent or correct flexion contractures of
         the joints.
      c. Traction applied for relief of pain and/or muscle spasm in the cervical spine.
   2. Check the orders carefully for specific order to release traction before doing so.
      a. Many clients with the above-mentioned complaints are in continuous traction.
D. Learn in each case exactly what activities are to be allowed (and encouraged) as well
   as what limitations are to be put upon them.
   1. Be sure that the client understands how much activity of the body and of the
      injured part is allowed.
   2. No unnecessary restrictions of motion should be imposed upon traction clients.
      They merely cause:
      a. Unnecessary aches and pains.
      b. Loss of muscle tone.
      c. Unnecessary stiffness.
      d. Atrophy, which, in extreme cases, may result in permanent deformity.
   3. Restriction of motion should be limited to doctor's orders. There is no advantage
      to having a bone healed in proper alignment if the soft tissue is rendered useless
      because of disuse, atrophy or contractures.
4. It is important that the parts of the body not in traction be kept in as good condition as possible. Specific exercises may be ordered later but the client should start at once to:
   a. Use the trapeze.
   b. Reach for things.
   c. Comb his own hair.
   d. Tie his own gown.
   e. Perform any other activity that does not interfere with the efficiency of his traction.

5. Check orders carefully on clients with cervical or dorsal spine injuries. Arm activities may be contraindicated.

VI. Questions to ask yourself regarding traction:

   A. Is the circulation to extremity adequate? Pallor, cyanosis, numb, cold, edema?
   B. Is the condition of the skin around the tape satisfactory? Irritation, pimples, purulent discharge?
   C. Is the client warm and comfortable?
   D. Is the client's bed position good?
   E. Is the foot in treatment protected against footdrop?
   F. Is the provision made for maintaining the limb in neutral position and for preventing external rotation?
   G. Is there any inversion or eversion of the foot in traction?
   H. Is the opposite extremity in good alignment and protected against the pressure of bed clothes?
   I. Is the popliteal space free from pressure?
   J. Check skin areas around the Achilles tendon and the malleoli carefully.
   K. Is the tape slipping at any point?
   L. Is the pulley working mechanically? Shallow groove, unmoving pulley?
   M. Is the footplate or spreader wide enough to prevent irritation of the malleoli but not so wide that the tapes tend to pull from the limb?
   N. Does the footplate or spreader contact the end of the bed?
   O. Are the weights at a good level above the floor and a considerable distance below the pulley?
   P. Are the knots secure?
   Q. Is countertraction provided?
   R. Is there any impingement on the ropes--bedclothes, etc.?
   S. Does the bed sag under the client's buttocks?
   T. Are the heels digging in the mattress?
   U. Skeletal traction: Is there any drainage, swelling, edema, redness at the pin site?
<table>
<thead>
<tr>
<th>TRACTION TYPE</th>
<th>APPLICATION SITE</th>
<th>WEIGHT</th>
<th>CARE FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUCK'S EXTENSION</td>
<td>Arm or leg (one or both)</td>
<td>5 to 8 lb per extremity</td>
<td>• Clean and dry the skin. Be sure the client has no open cuts or wounds.</td>
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<tr>
<td></td>
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<td></td>
<td>• Make sure equipment (tape, bandages, traction straps, or both) is new (when appropriate) and functioning properly.</td>
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<td></td>
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<td></td>
<td>• Remove the traction apparatus to care for and observe tissues.</td>
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<td></td>
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<td></td>
<td>• Teach the client how to use traction at home.</td>
</tr>
<tr>
<td>RUSSELL'S EXTENSION</td>
<td>Leg only (one or both)</td>
<td>5 to 10 lb per leg</td>
<td>• Arrange pulleys and ropes, and determine the weight by the principle &quot;for every force in one direction, there's an equal force in the opposite direction.&quot;</td>
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<td></td>
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<td></td>
<td>• Loosen the knee sling for care and observation.</td>
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<td></td>
<td>• Keep the client recumbent.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Remove the traction to care for the client (always check with the physician before removing).</td>
</tr>
<tr>
<td>BRYANT'S EXTENSION</td>
<td>One or both legs (usually both)</td>
<td>Varies - enough weight to raise the buttocks off the bed</td>
<td>• Use for children under 35 lb.</td>
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<td></td>
<td>• Position both legs at right angles to the buttocks.</td>
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<td></td>
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<td></td>
<td>• Position the child's buttocks slightly off the bed to ensure correct amount of pull.</td>
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<td></td>
<td>• Supervise the child closely to maintain the recumbent position.</td>
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<td></td>
<td>• Remove the traction to provide care, according to the physician's orders or institutional policy (requires two people, with one gently maintaining manual traction).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Teach the child and parents to guardians how to use this traction at home.</td>
</tr>
</tbody>
</table>
UNIT: CHRONIC CHILDHOOD ILLNESSES

OBJECTIVES:

At the completion of this unit the student will be able to:

1. Define chronic illness and identify how it influences the child and family at different developmental levels.

2. Describe the components of a comprehensive assessment of a chronically ill child and his/her family.

3. Describe the pathophysiology, clinical manifestations, and nursing management of a child with:
   a. Cystic Fibrosis
   b. Acute lymphocytic Leukemia
   c. Sickle Cell Anemia
   d. Hemophilia

4. Identify nursing strategies to assist families in coping with chronic illness.

REQUIRED READINGS


   b. Acute Lymphocytic Leukemia, pp. 1002-1019.
   d. Hemophilia, pp. 997-999.
UNIT: CHILDREN AND DEATH

OBJECTIVES:
At the completion of this unit the student will be able to:

1. Describe the components of a comprehensive assessment of a dying child and his/her family.
2. Identify a child's concept of death at different developmental levels.
3. Describe several methods of assessing pain in children.
4. Identify both pharmacologic and non-pharmacologic methods of treating pain in children.

REQUIRED READINGS:
# LEUKEMIA

<table>
<thead>
<tr>
<th>CLINICAL MANIFESTATIONS</th>
<th>PATHOLOGIC BASIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Bone Marrow Depression</strong></td>
<td>Anemia $\rightarrow$ RBC, $\downarrow$ O$_2$ Carrying capacity of Blood</td>
</tr>
<tr>
<td>Malaise</td>
<td></td>
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<tr>
<td>Fatigue</td>
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<tr>
<td>Weakness</td>
<td></td>
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<tr>
<td>Pallor</td>
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<tr>
<td>Fever</td>
<td>1. Infection - $\downarrow$ Immune System</td>
</tr>
<tr>
<td>Frequent Infections</td>
<td>2. $\uparrow$ Metabolism by Neoplastic Cells</td>
</tr>
<tr>
<td>Bleeding:</td>
<td>$\downarrow$ Thrombocytes (platelets) $\rightarrow$</td>
</tr>
<tr>
<td>Petechiae</td>
<td>$\downarrow$ Clotting Ability</td>
</tr>
<tr>
<td>Ecchymosis</td>
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<tr>
<td>Gingival Bleeding</td>
<td></td>
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<tr>
<td>Epistaxis</td>
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</tr>
<tr>
<td><strong>2. Bone Pain and Tenderness</strong></td>
<td>Subperiosteal bone Infiltration $\rightarrow$ Weakbone</td>
</tr>
<tr>
<td>Migratory Joint Pain</td>
<td></td>
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<tr>
<td>pathological Fractures</td>
<td></td>
</tr>
<tr>
<td><strong>3. Headache, Nausea and Vomiting</strong></td>
<td>Leukemic Filtration of CNS $\rightarrow$ ICCP, Meningeal Irritation</td>
</tr>
<tr>
<td>Papilledema</td>
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<tr>
<td>Cranial Nerve Palsies</td>
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<tr>
<td>Nuchal Rigidity</td>
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<tr>
<td>Seizures</td>
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<tr>
<td>Coma</td>
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</tr>
<tr>
<td><strong>4. Abdominal Discomfort - Fullness, Pain</strong></td>
<td>Generalized Lymphadenopathy</td>
</tr>
<tr>
<td></td>
<td>Hepatomegaly</td>
</tr>
<tr>
<td></td>
<td>Enlarged Kidney</td>
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<tr>
<td></td>
<td>Splenomegaly</td>
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<tr>
<td></td>
<td>R/T Leukemic Cell Infiltration</td>
</tr>
<tr>
<td><strong>5. $\uparrow$Vulnerability To Infections – Especially:</strong></td>
<td>1. Immaturity of WBC</td>
</tr>
<tr>
<td></td>
<td>and</td>
</tr>
<tr>
<td></td>
<td>2. Ineffective Immune System</td>
</tr>
<tr>
<td>Pulmonary</td>
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</tr>
<tr>
<td>Urinary</td>
<td></td>
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<tr>
<td>Blood</td>
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<tr>
<td>Peri-rectal</td>
<td></td>
</tr>
<tr>
<td>CLINICAL MANIFESTATIONS</td>
<td>PATHOLOGIC BASIS</td>
</tr>
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<td>------------------------</td>
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</tr>
<tr>
<td>6. Hematologic Abnormalities - Anemia - Weak, Pale Thrombocytopenia</td>
<td>Physical and Metabolic Encroachment of Leukemic Cells on RBC and Thrombocyte Precursors</td>
</tr>
<tr>
<td>7. Lymph Node Tenderness</td>
<td>Lymphadenopathy</td>
</tr>
<tr>
<td>8. Hyperuricemia [\downarrow] Renal Damage [\rightarrow] Renal Failure</td>
<td>Abnormal Metabolism of Leukemic Cells</td>
</tr>
<tr>
<td>9. Hypermetabolism - Muscle Wasting Weight Loss Anorexia Fatigue</td>
<td>Cell Deprivation of Nutrients by Invading Cells</td>
</tr>
</tbody>
</table>
**GENERAL CARE OF CHILDREN RECEIVING CHEMO THERAPY**

*Side effects depend on the drug(s) being used.*

<table>
<thead>
<tr>
<th>POTENTIAL PROBLEMS</th>
<th>INTERVENTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Leukopenia.</td>
<td>a. Protect patient from infection and exposure to infections.</td>
</tr>
<tr>
<td></td>
<td>b. Isolate when needed (when ANC is below 500).</td>
</tr>
<tr>
<td></td>
<td>c. Instruct patient and family, and visitors about infection risk.</td>
</tr>
<tr>
<td></td>
<td>Restrict visitors if necessary.</td>
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<tr>
<td></td>
<td>d. Teach temperature taking/ reading. No rectal temps.</td>
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<tr>
<td></td>
<td>e. Instruct on strict handwashing with Betadine.</td>
</tr>
<tr>
<td></td>
<td>f. Observe for early signs of infections:</td>
</tr>
<tr>
<td></td>
<td>1. Decreased B/P.</td>
</tr>
<tr>
<td></td>
<td>2. Decreased or increased temperature.</td>
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<td></td>
<td>3. Assess common sites of infection every shift.</td>
</tr>
<tr>
<td></td>
<td>4. Personality changes (lethargy, irritability).</td>
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<tr>
<td></td>
<td>2. Maintain skin integrity:</td>
</tr>
<tr>
<td></td>
<td>a. Turn every 2 hours.</td>
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<tr>
<td></td>
<td>b. Keep skin clean, dry.</td>
</tr>
<tr>
<td></td>
<td>c. Massage potential pressure areas.</td>
</tr>
<tr>
<td></td>
<td>3. Maintain urinary tract integrity:</td>
</tr>
<tr>
<td></td>
<td>a. Perineal care b.i.d. and p.r.n. with diaper changes.</td>
</tr>
<tr>
<td></td>
<td>b. Foley cath care every shift and prn.</td>
</tr>
<tr>
<td></td>
<td>c. Encourage fluids.</td>
</tr>
<tr>
<td></td>
<td>d. Assess for burning or pain with urination.</td>
</tr>
<tr>
<td></td>
<td>e. Assess characteristic of urine.</td>
</tr>
<tr>
<td>POTENTIAL PROBLEMS</td>
<td>INTERVENTIONS</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------</td>
</tr>
</tbody>
</table>
| 4. Maintain respiratory tract integrity.  
a. Cough, deep breathe every 2 hrs.  
b. Auscultate lung sounds every shift and p.r.n. Notify physician if significant change present.  
c. Assess sputum for color, consistency and amount. Send specimen to Lab if ordered.  
d. Encourage frequent ambulation.  
e. Encourage adequate rest periods. |
| 5. Administer antibiotics as ordered.  
a. Bactrim/Septra as a prophylaxis for pneumocystis carinii pneumonia.  
b. Antibiotics appropriate for infective organism. |
| 6. Discharge teaching.  
a. Stress importance of having blood counts done as ordered.  
b. Stress importance of avoiding crowds when WBC's are low. |
| B. Thrombocytopenia. | B. 1. Monitor platelet count and notify physician if decrease occurs.  
2. Observe for signs of bleeding.  
a. Bruising or petechiae.  
b. Hematuria. (Dipstick)  
c. Tarry stools. (Hemacult)  
d. Oozing from venipuncture.  
e. Oral or nasal hemorrhage.  
f. Vital signs every 2 hours.  
g. Monitor for signs of internal bleeding.  
h. Check for signs of abnormal bleeding. |
<table>
<thead>
<tr>
<th>POTENTIAL PROBLEMS</th>
<th>INTERVENTIONS</th>
</tr>
</thead>
</table>
| 3. Avoid invasive procedures.  
  a. Avoid injections - apply pressure 3-5 minutes after necessary injections. If injection is necessary use smallest gauge needle possible (27 gauge long needle).  
  b. Avoid rectal/vaginal suppositories.  
  c. No rectal temperatures unless ordered by physician.  
| 4. Administer stool softeners as ordered to prevent trauma to rectal mucosa.  
| 5. Use electric razors, not straight razors, and toothettes instead of toothbrushes to avoid trauma.  
| 6. Do not give aspirin or aspirin-containing products unless ordered by physician.  
| 7. Discharge teaching:  
  a. Reinforce all of the above.  
  b. No sports, athletics, or rigorous play when platelet count low.  
| C. Anemia.  
| 1. Plan activities to allow for rest periods.  
| 3. Administer PRBC's as ordered.  
| 4. Administer oxygen as ordered.  
| 5. Assess patient's skin color.  
| 6. Always clarify use of irradiated blood products for transfusions.  
| 7. Monitor/assess for chest pain and dyspnea.  
<p>| 8. Keep warm.  |</p>
<table>
<thead>
<tr>
<th>POTENTIAL PROBLEMS</th>
<th>INTERVENTIONS</th>
</tr>
</thead>
</table>
| 2. G.I. complications--nausea, vomiting, diarrhea. | 2. A. Nausea and vomiting:  
1. Give antiemetics routinely as ordered.  
2. Encourage food and fluids in small amounts frequently.  
4. Keep environment pleasant and free of odors.  
   a. Open tray away from patient to dispense food odors.  
   b. Remove soiled bedpans, commodes--use air fresheners if tolerated by patient.  
5. Have emesis basin at bedside.  
6. Accurate Intake and Output.  
7. Weight daily.  
9. Report symptoms of imbalance:  
   a. Confusion  
   b. Lethargy  
   c. Tremors  
   d. Poor or decreased skin turgor.  
   e. Absence of tears.  
   f. Decreased urine output.  
   g. Dry mucous membranes.  
10. Urine specific gravity and dip-stick every 8 hours; every 4 hours and p.r.n. if abnormal.  
11. If vomiting or diarrhea persists, obtain IV order from physician for fluid maintenance requirements. |
### POTENTIAL PROBLEMS

<table>
<thead>
<tr>
<th>INTERVENTIONS</th>
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</thead>
<tbody>
<tr>
<td><strong>B. Diarrhea.</strong></td>
</tr>
<tr>
<td>1. Medicate with anti-diarrheals, as ordered.</td>
</tr>
<tr>
<td>2. Document frequency, consistency, amount and number of stools.</td>
</tr>
<tr>
<td>3. Check stools for occult blood and notify physician.</td>
</tr>
<tr>
<td>4. Maintain skin integrity.</td>
</tr>
<tr>
<td>a. Keep perineum clean and dry.</td>
</tr>
<tr>
<td>b. Use A &amp; D Ointment or Calmosephine Ointment as needed to protect skin.</td>
</tr>
<tr>
<td>c. Air dry buttocks and perineum p.r.n. for excoriation.</td>
</tr>
<tr>
<td>5. Encourage constipating foods, i.e., BRATY diet (bananas, rice, applesauce, toast, yogurt).</td>
</tr>
</tbody>
</table>

<p>| <strong>3. Hemorrhagic cystitis.</strong> |
| A. Force fluids - amount per physician's order. |
| B. Run IV fluids at ordered rate. |
| C. Instruct patient to void often and especially to empty bladder before bedtime. |
| D. Check urine for color, amount and presence of blood after each voiding. (Dip stick) |
| E. Notify physician of any complaint of burning on urination. |
| F. Maintain accurate intake and output. |
| G. Obtain order for urinary catheterization if urine output not adequate according to physician specifications. Know normal safe urinary output for age/weight. |
| H. Obtain order for foley if patient not potty-trained to prevent urine stasis and G/U irritation. |
| I. Attempt to give early in day to decrease opportunity for urine stasis overnight. |</p>
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<tr>
<th>POTENTIAL PROBLEMS</th>
<th>INTERVENTIONS</th>
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<tbody>
<tr>
<td>4. Alopecia.</td>
<td>4. A. Explain to patient/parent that hair may fall out.</td>
</tr>
<tr>
<td></td>
<td>B. Encourage patient/parent to be gentle with hair.</td>
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<tr>
<td></td>
<td>1. No permanents.</td>
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<tr>
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<td>2. No hair coloring.</td>
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<tr>
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<td>3. Use soft bristle brushes.</td>
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<tr>
<td></td>
<td>C. Encourage patient/parent to talk about feelings about hair loss.</td>
</tr>
<tr>
<td></td>
<td>D. Offer assistance to obtain wig.</td>
</tr>
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<td>E. Explain regrowth after treatment.</td>
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<td>F. Explain loss of body heat from the head and exposure.</td>
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<td></td>
<td>1. Encourage use of head covering (i.e., hats or scarves).</td>
</tr>
</tbody>
</table>

5. Stomatitis and oral yeast infections.

| A. Observe daily for white patches in mouth. |
| B. Instruct patient and parents on importance or oral care every 2 hours while awake, especially after meals. |
| C. Oral care solutions: 1. 1/4 tsp. baking soda and 1/4 tsp. salt in 1 cup warm water, or 1/2 strength hydrogen peroxide and water. |
| D. No commercial mouthwashes. |
| E. Use toothettes or soft bristle brushes. |
| F. Bland diet. |
| G. Give medications as ordered to control pain. 1. Xylocaine viscous. 2. Mycostatin. 3. Mycostatin and Benadryl. |

6. Perineal yeast infection.

<p>| A. Observe buttocks and perineal area for signs of yeast infection. 1. Redness and/or edema. 2. White thick drainage. 3. Burning and/or itching. |
| B. Peri-care every 4 hours and p.r.n. with diaper changes. |
| C. Obtain order for yeast culture. |
| D. Topical antibiotics as ordered. |
| E. Air dry buttocks and perineal area for excoriation. |</p>
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<tr>
<th>POTENTIAL PROBLEMS</th>
<th>INTERVENTIONS</th>
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</table>
| 7. Extravasation of drug. | 7. A. Check IV site prior to infusion, during and after administration of drug for:  
2. Redness.  
3. Edema.  
4. Stopped flow of IV fluids.  
B. If extravasation occurs, notify IV nurse or chemotherapy nurse who will follow EXTRAVASATION PROTOCOL. Do not remove IV catheter!  
C. Notify physician. |
B. Prevent constipation by:  
1. Checking for bowel movement daily.  
2. Encouraging fluids (i.e., fruit juices).  
3. Instruct importance of stool softeners and laxatives as ordered - offer as needed.  
C. Observe for abdominal pain and distention every 8 hours and p.r.n.  
D. Palpate and auscultate abdomen every 8 hours and p.r.n.  
E. Record quality of bowel sounds every 8 hours and p.r.n.  
F. Evaluate for peripheral neuropathy.  
1. Numbness and tingling.  
2. Loss of deep tendon reflex. |
| 9. Cardiac toxicity. | 9. A. Physician may order baseline EKG and/or ECHO prior to administration of drug.  
B. Observe for signs of CHF.  
1. Weight gain, edema, inadequate output, dyspnea, hypertension.  
C. Observe apical and radial pulses for regularity.  
1. Notify physician of irregularity.  
2. Obtain EKG if ordered.  
3. Obtain Echocardiogram as ordered by physician. |
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<tr>
<th>POTENTIAL PROBLEMS</th>
<th>INTERVENTIONS</th>
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<tbody>
<tr>
<td>10. Red-colored urine.</td>
<td>10. A. Inform patient and parents that red-colored urine is an expected but harmless response to the drug.</td>
</tr>
</tbody>
</table>
| 11. Renal toxicity.                | 11. A. Force fluids - obtain order from physician for fluid maintenance requirements.  
B. Check BUN, Creatinine, and notify physician of increase.  
C. Maintain accurate I & O.  
D. Maintain good skin care.  
E. Instruct patient to void frequently.  
F. Daily weight.  
G. Specific gravity and dip stick every 8 hours.  
H. Give mannitol as ordered.  
I. Maintain urine pH ↑ 7.0 when indicated. |
| 12. Chemically induced fever.      | 12. A. Monitor temperature every 4 hours during administration of drug - every 2 hours if elevated.  
B. Encourage fluid intake.  
C. Give antipyretics as ordered.  
D. Tepid sponge baths.  
E. Prevent chills.  
F. Inform parents that elevated temperature is common with this drug and not necessarily an infection. |
| 13. Folic acid deficiency (with high dose MTX). | 13. A. Observe for:  
1. Mucositis.  
2. Diarrhea.  
3. Leukopenia.  
4. Anemia.  
5. Thrombocytopenia.  
B. Careful, exact administration of leukovorin per physician's orders. |
<table>
<thead>
<tr>
<th>POTENTIAL PROBLEMS</th>
<th>INTERVENTIONS</th>
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</thead>
</table>
<pre><code>                                  | 1. Report abnormal levels to physician.                                           |
</code></pre>
<p>|                                    | B. Observe for:                                                              |
|                                    | 1. Jaundice                                                                  |
|                                    | 2. Ascites/Distended abdomen                                                  |
|                                    | 3. Pruritis                                                                  |
|                                    | 4. Weakness                                                                  |
|                                    | 5. Lethargy                                                                  |
|                                    | 6. Right upper quadrant pain.                                                |</p>
| 15. Pulmonary fibrosis and chest   | 15. A. Auscultate lungs every 8 hours and p.r.n.; notify physician of significant changes.  
<pre><code>                                  | pain.                                                                        |
</code></pre>
<p>| pain.                              | B. Assess for dyspnea.                                                        |
|                                    | C. Observe for signs of respiratory distress:                               |
|                                    | 1. Color changes - cyanosis.                                                  |
|                                    | 2. Nasal flaring.                                                            |
|                                    | 3. Retractions                                                              |
|                                    | 4. Tachypnea                                                                |
|                                    | D. Encourage patient to cough and deep breath every 2 hours.                 |
|                                    | E. Record and record exact location, type and duration of chest pains.       |
| 16. Skin changes.                  | 16. A. Observe (skin for changes):                                           |
|                                    | 1. Hyperpigmentation.                                                        |
|                                    | 2. Hyperkeratosis.                                                           |
|                                    | 3. Pruritis                                                                  |
|                                    | 4. Ulcerations                                                               |
|                                    | 5. Vesiculations.                                                            |
|                                    | 6. Facial flushing and facial paresthesias.                                  |
|                                    | 7. Erythema                                                                 |
|                                    | 8. Urticarial rashes.                                                        |
|                                    | B. Treat according to orders.                                                 |</p>
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<tr>
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</thead>
<tbody>
<tr>
<td>17. Flushing of skin with rapid infusion (2-4 hours)</td>
<td>17. A. Explain to patient and parents that this may happen.</td>
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<tr>
<td></td>
<td>B. Infuse as slowly as can within time frame ordered (eg, if ordered over 3-4 hours, infuse over 4 hours).</td>
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<td>18. A. Monitor neurological status:</td>
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<tr>
<td></td>
<td>1. Headache, drowsiness, blurred vision.</td>
</tr>
<tr>
<td></td>
<td>2. Convulsions.</td>
</tr>
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<td></td>
<td>3. Changes in motor functioning.</td>
</tr>
<tr>
<td></td>
<td>4. Ataxia, dizziness.</td>
</tr>
<tr>
<td></td>
<td>B. P.T. consult may be helpful for assistive devices.</td>
</tr>
<tr>
<td></td>
<td>C. Encourage/assist patient to maintain independence.</td>
</tr>
<tr>
<td></td>
<td>D. Allow patient and parent to ventilate feelings.</td>
</tr>
<tr>
<td>19. Anaphylaxis. (Asparaginase EL-Spar)</td>
<td>19. A. Skin test prior to giving - usually one time before first dose.</td>
</tr>
<tr>
<td></td>
<td>1. Standard dose is 2 IU</td>
</tr>
<tr>
<td></td>
<td>B. Assess for: Rapid onset of</td>
</tr>
<tr>
<td></td>
<td>1. Urticaria</td>
</tr>
<tr>
<td></td>
<td>2. Chills</td>
</tr>
<tr>
<td></td>
<td>3. Fever</td>
</tr>
<tr>
<td></td>
<td>4. Flushing</td>
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<tr>
<td></td>
<td>5. Fall in B.P.</td>
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<td></td>
<td>6. Dyspnea</td>
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<tr>
<td></td>
<td>C. Give IM in one injection - do not divide dose into 2 syringes.</td>
</tr>
</tbody>
</table>
Pediatric Oncology -- Diet Recommendations for Immunosuppressed Patients

*Eat a variety of health foods, including grains and fiber foods. Drink as many fluids as possible, especially the day before chemotherapy and for 48 hours after chemotherapy.

*Restrict foods that many introduce pathogenic organisms into the GI tract. This includes the following:

- Do not eat fresh strawberries or raspberries. Wash, cook or peel all other fresh fruits and vegetables.
- Do not eat raw or undercooked meat, fish, shellfish, poultry, game, eggs, hot dogs, tofu* sausage or bacon.
- Do not eat cold-smoked fish or lox or pickled fish.
- Do not eat or drink unpasteurized products such as milk, milk products, cheese, yogurt, commercial fruit or vegetable juices, cider, or honey. This includes raw honey and milk.
- Do not eat aged cheeses (such as Brie, Camembert, blue Roquefort, sharp Cheddar or Stilton); do not eat Mexican hot cheese, farmer’s cheese or feta cheese.
- Do not eat refrigerated cheese-based salad dressing (such as blue cheese) which are not shelf-stable.
- Do not eat miso products (including miso soup), tempe (tempeh) or mate tea.
- Do not use raw, uncooked Brewer’s yeast.
- Do not eat moldy or out-dated food products.

*Cut tofu into 1 inch cubes and boil it for 5 minutes in water or broth before adding the tofu to a recipe or consuming it. Quickly stir-frying tofu is insufficient as the only cooking method.

*Use safe practices in the preparation, handling and storage of food, including good hand washing and refrigeration.

*Test well water once a year for pathogens. Contact your local health department for more information about testing well water.
ALLOPURINOL

Action: Metabolic inhibition of the enzyme xanthine oxidase, which is necessary for the formation of uric acid from purine.

Use: Prophylactic treatment to prevent tissue urate deposition, renal calculi, or uric acid nephropathy in those with leukemias, lymphomas and malignancies who are receiving chemotherapy.

Baseline Lab

Test: 1 CBC
2 Renal and hepatic function tests
3 Serum uric acid (Nitrogenous waste product found in blood. Derived from breakdown of purines from the nucleic acids of cells and xanthines [purine compounds found in most body tissues]).

↑ = hyperuricemia
   a marked cellular destruction
   b Leukemia 2\(^0\) to ↑ production and destruction of WBC, resulting in an rate of turnover of the nucleic acid of those cells, leading to purine catabolism.
<table>
<thead>
<tr>
<th>NURSING GOALS</th>
<th>NURSING INTERVENTIONS</th>
<th>RATIONALE</th>
</tr>
</thead>
</table>
| **A. Ensure adequate hydration** | 1. **Accurate I & O** Normal output for child = 50 ml/kg/24hrs. Output ↓ than 0.5 ml/1kg/hr suggests pathologic oliguria  
2. **Encourage liberal fluid intake (unless contraindicated):**  
   - 100 ml/kg for 1st 10 kg of Body Weight  
   - 50 ml/kg for next 20 kg of Body Weight  
   - 20 ml/kg for weights above 20 kg  
3. **Urine specific gravity**  
   - NB - 1.001-1.020  
   - Child - 1.001-1.020  
4. **Urine osmolality**  
5. **Urine Ph**  
6. **Diet Restrictions**  
7. **Administer:** NaHco₃, K⁺ Citrate, Diamox  
8. **Administer with full glass of H₂O, food or meals, or immediately p.c.**  
9. **Observe for signs and symptoms uric-acid stone formation**  
10. **Assess for skin rash**  
11. **Assist with ambulation** | 1. To determine whether or not the patient’s intake and output is adequate for age/wt.  
2. Minimizes uric acid precipitation thus preventing urate stones and kidney damage.  
3. Helps assess patients fluid needs ↑ 1.030 = fluid depletion (measure of the density of urine compared with the density of H₂O (1.000) or the weight of urine compared to the weight of an equal volume of distilled H₂O).  
4. ↑ Osmolality = fluid depletion (urine osmolality - measurement of the concentration of urine and reflects the total number of osmotically active particles in urine).  
5. Uric acid in the form or urates, will crystallize in acid urine and form renal stones.  
6. AVOID: (produce acid waste products) shell fish, asparagus, mushrooms, spinach, roe, scallops, broth, consomme, mincemeat, sardines, anchovies, organ meats, poultry, meats, fish cheese, eggs, bread ENCOURAGE: alkaline-ash foods; most fruits and vegetables (except corn, lentils, plums, prunes, cranberries)  
7. Produce alkaline urine  
8. To minimize gastrointestinal side effects.  
10. May become severe - exfoliative, urticarial, or purpuric lesions, Stevens-Johnson Syndrome (erythema multiforma)  
11. Drowsiness may occur |
### BASIC HEMATOLOGIC TESTS

<table>
<thead>
<tr>
<th>CELL</th>
<th>NORMAL VALUES</th>
<th>FUNCTION</th>
<th>IMPLICATIONS OF ALTERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leukocytes (Differentials)</td>
<td>5,000-10,000/cu.mm.</td>
<td>First line of defense against invading micro-organisms.</td>
<td>Leukocytosis (&gt; 10,000/cu.mm.)&lt;br&gt;--evidence of healthy host response to infection&lt;br&gt;--tissue destruction&lt;br&gt;--metabolic toxic states&lt;br&gt;--certain drugs and chemicals&lt;br&gt;--following acute hemorrhage of with hemolytic anemia</td>
</tr>
<tr>
<td>A. Granulocytes 1. Neutrophils</td>
<td>3,000-7,000/cu.mm. (&gt;60% of all WBC)</td>
<td>Phagocytosis&lt;br&gt;(Engulfs and destroys bacteria)</td>
<td>Leukopenia (&lt; 3,000/cu.mm.)&lt;br&gt;--inability to maintain immune response&lt;br&gt;--certain viral infections (hepatitis)&lt;br&gt;chemicals, drugs, blood diseases (aplastic anemia)</td>
</tr>
<tr>
<td>a. &quot;bands&quot; (stabs)</td>
<td>3-5% of WBC</td>
<td>Juvenile or immature neutrophils</td>
<td>Predominance of bands over segs indicates overwhelmed defense system.</td>
</tr>
<tr>
<td>b. &quot;segs&quot;</td>
<td>50-400/cu.mm.</td>
<td>Segmented or mature neutrophils</td>
<td>Normal bands: segs ratio indicates infection under control.</td>
</tr>
</tbody>
</table>

↑ 2° to tissue damage, inflammation and exudate release and migration of neutrophils from bone marrow storage to injury site. |

↑ in allergy, hay fever, asthma. |

↓ in patient with insulin, ACTH, epinephrine levels.
### Basic Hematologic Tests

#### Page Two

<table>
<thead>
<tr>
<th>CELL</th>
<th>NORMAL VALUES</th>
<th>FUNCTION</th>
<th>IMPLICATIONS OF ALTERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Basophils</td>
<td>25-100/cu.mm.</td>
<td>Produce histamine and heparin—help prevent blood from clotting in fibrinolysis and anaphylactoid states.</td>
<td>↑ in chronic myelogenous Leukemia, irradiation, hemolytic anemia, splenectomy. ↓ states have not been identified.</td>
</tr>
</tbody>
</table>

| B. Lymphocytes | 1,000-4,000/cu.mm | Responsible for antibody production | ↑ infection, viral disease (mono, influenza, hepatitis), Lymphocytic Leukemia |

| Children and adolescents - 1,500-8,500/cu.mm | Circulates, identifies foreign cell, produces antibodies, destroys toxic products of protein metabolism. | ↑ 2<sup>0</sup> to bone marrow suppression of other WBC need for antibodies |

| ↓ in stress reaction from burns or trauma, or patient taking ACTH or cortisone | ↓ = marked inability to build and sustain a defense. |

| C. Monocytes | 100-600/cu.mm. | Macrophages (clean up debris of abscess or infection) phagocytosis (ingest bacteria, Protozoa, foreign particles). | ↑ in T.B., monocytic Leukemia, subacute bacterial endocarditis |

| ↑ in bacterial infection | ↓ is rare because count is normally low. |
SICKLE CELL ANEMIA

Sickled Red Blood Cells
(Rigid, Fragile, Hemolyzed)

\[\downarrow\]

\[\downarrow\] Ability to Flow Easily Thru Tiny Capillaries

\[\downarrow\]

Clumped $\rightarrow$ Obstruction

\[\downarrow\]

Impairment of Blood Flow

\[\downarrow\]

Tissue Hypoxia

\[\downarrow\]

More Sickling

\[\downarrow\]

Infarcts and Necrosis
UNIT: ALTERATIONS IN REGULATORY MECHANISMS -- ENDOCRINE

OBJECTIVES:

At the completion of this unit the student will be able to:

1. Discuss the interferences with regulatory mechanisms and metabolic process that affect the child.
2. Consider the assessment factors that assist the nurse in developing an individualized plan of nursing management.
3. Discuss nursing management of the child with interferences with regulatory mechanisms and metabolic process.
4. Describe the developmental, emotional and health maintenance needs related to the child with interferences with regulatory mechanisms and metabolic process.

REQUIRED READINGS:


SELF-STUDY

Diabetes insipidus
Congenital hypothyroidism
PKU (Phenylketonuria)
Galactosemia
Pheochromocytoma

REVIEW

Diabetes Mellitus
UNIT: ALTERATION IN NEURO/TRAUMA -- CHILD MALTREATMENT

OBJECTIVES:

At the completion of this unit the student will be able to:

1. Differentiate between child abuse and neglect.
2. Define physical and emotional abuse and neglect of children.
3. Identify current epidemiological trends in child abuse.
4. Describe common characteristics of abused children and their abusive parents.
5. Recognize pertinent cues indicative of child abuse.
6. Understand the nurses legal and ethical responsibility for reporting child abuse.
7. Describe strategies for family intervention where abusive behavior exists.
8. Describe community resources available to abusive families.
9. Identify professional disciplines which may become involved with abusive families and their potential roles.
10. Identify ethical issues involved regarding the rights of individuals vs. rights of families vs. rights of the wider society.
11. Distinguish between the types of head injuries and the serious complications.

REQUIRED READINGS:

COUNCIL FOR THE PREVENTION OF CHILD ABUSE AND NEGLECT  
111 South Capitol Avenue Suite 200  
Post Office Box 20247  
Lansing, Michigan  48901

REPORTING CHILD ABUSE AND NEGLECT IN MICHIGAN  
--according to Act. No. 238, Public Acts of 1978,  
Michigan Compiled Laws, Acts No. 252 and 573,  

WHO REPORTS AND UNDER WHAT CONDITIONS:

"A physician, coroner, dentist, medical examiner, nurse, audiologist, certified social worker,  
social worker, social worker technician, a person licensed to provide emergency medical care,  
psychologist, family therapist, school administrator, school counselor or teacher, law  
enforcement officer, or duly regulated child care provider" is required to report if they have  
"reasonable cause to suspect child abuse or neglect."

"... a pregnancy or the presence of a venereal disease in a child who is less than 12 years of age  
shall be reasonable cause to suspect child abuse."

"If reporting person is a member of a hospital, agency, or school staff, he shall notify the person  
in charge thereof of his finding that the report has been made, and make a copy of the written  
report available to the person in charge."

"In addition to those persons required to report ... any person, including a child, who has  
reasonable cause to suspect child abuse or neglect, may  
report ..."

DEFINITIONS:

"Child abuse" means harm or threatened harm to a child's health or welfare by a parent, legal  
guardian, or any other person responsible for the child's health or welfare or by a teacher or  
teacher's aide which occurs through nonaccidental physical or mental injury; sexual abuse;  
sexual exploitation; or maltreatment.

"Child neglect" means harm or threatened harm to a child's health or welfare by a parent,  
legal guardian, or any other person responsible for the child's health or welfare which occurs  
through either of the following:

(i) Negligent treatment, including the failure to provide adequate food, clothing, shelter, or  
medical care.  
(ii) Placing a child at an unreasonable risk to the child's health or welfare by failure of the  
parent, legal guardian, or any other person responsible for the child's health or welfare to  
intervene to eliminate that risk when that person is able to do so and has or should have,  
knowledge of the risk.
WHEN TO REPORT AND TO WHOM:

An initial oral report shall be made immediately to the State Department of Social Services and a written report shall be filed within 72 hours with the State Department of Social Services of the county in which suspected abused or neglected child is found.

CONTENT OF REPORT:

"The written report shall contain the name of the child and a description of the abuse or neglect. If possible, the report shall contain the names and address of the child's parents, guardian or other persons with whom the child resides, and the child's age. The report shall contain other information available to the reporting person which might establish the cause of abuse or neglect and the manner in which it occurred."

CONFIDENTIALITY:

"The identity of a reporting person shall be confidential subject to disclosure only with the consent of that person or by judicial process."

IMMUNITY:

"A person acting in good faith who makes a report or assists in any other requirement of this act shall be immune from civil or criminal liability which might otherwise be incurred thereby. A person making a report . . . shall be presumed to have acted in good faith."

PRIVILEGED COMMUNICATION:

"any legally recognized privileged communication except that between client and attorney is abrogated and shall neither constitute grounds for excusing a report otherwise required to be made nor for excluding evidence in a civil child protective hearing . . . "

FAILURE TO REPORT:

"A person required to report an instance of suspected child abuse or neglect who fails to do so is civilly liable for the damages proximately cause by the failure."
UNIT: ALTERATIONS IN NEURO/SENSORY STATUS

OBJECTIVES:

At the completion of this unit the student will be able to:

1. Describe the components of a comprehensive assessment of a child and his/her family with alterations in neurological function.

2. Describe the acute care specific for children who have increased intracranial pressure, who are comatose, and who require neurosurgery.

3. Define the clinical manifestations, treatment, and principles of nursing management for major congenital malformations of the central nervous system.

4. Describe the clinical manifestations, diagnostic methods, treatment, and principles of nursing management for the child experiencing a seizure.

5. Correlate the clinical manifestations with the methods of diagnostic evaluation, treatment, and principles of nursing management for children with infectious processes that affect the central nervous system.

6. Examine how development influences alterations in neurological function in children from infancy through adolescents.

REQUIRED READINGS:


SPECIAL ATTENTION TO:

Hydrocephalus, pp. 1107-1112
Meningomyelocele, pp. 1253-1258
Meningitis, pp. 1092-1096
Brain tumors, pp. 1086-1092
Seizures, pp. 1098-1106
Cerebral palsy
Spinal muscular atrophy