Module E-1: Application of the Nursing Process in Caring for Pediatric Patients with Common Health Problems of the Musculoskeletal System

1. **Statement of Purpose**

   The functions of the musculoskeletal system include protection, support, locomotion, mineral storage, hemopoiesis, and heat production. It is the largest system in the body and its well being and functions are interdependent with the rest of the body systems. Health problems can be caused by a variety of factors from congenital malformations to infections and trauma. Nurses play an important role in detecting congenital anomalies in the infant and in providing psychological support to parents and families. Therefore it is important that the nurse be familiar with abnormal conditions and proficient in making assessments. This module concentrates on common musculoskeletal problems in the infant, child and adolescent and emphasizes the importance of the nurse's role in health promotion of the child and support for the family.

2. **Terminology**

<table>
<thead>
<tr>
<th>Traction</th>
<th>Open Reduction</th>
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<tbody>
<tr>
<td>Russell</td>
<td>Internal Fixation (ORIF)</td>
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<tr>
<td>Bryant's</td>
<td>Closed Reduction</td>
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<tr>
<td>Buck's</td>
<td>Compartment Syndrome</td>
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<tr>
<td>Ninety-degree-90-degree</td>
<td>Capillary Refill</td>
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<tr>
<td>Dunlop</td>
<td>Slit Catheter</td>
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<td>Balanced Suspension</td>
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<tr>
<td>Epiphysis</td>
<td>Meniscectomy</td>
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<td>Diaphysis</td>
<td>Fasciotomy</td>
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<tr>
<td>Osteomyelitis</td>
<td>Prosthesis</td>
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<tr>
<td>Scoliosis</td>
<td>Periosteum</td>
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<td>Osteogenic</td>
<td>Callus</td>
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<tr>
<td>Pott's Disease</td>
<td>Sprain</td>
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<td>Muscular Dystrophy</td>
<td>Strain</td>
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<td>Torticollis</td>
<td>Articular</td>
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<td>Legg-Calve-Perthes</td>
<td>Talipes Equinovarus</td>
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<tr>
<td>Osteosarcoma</td>
<td>Denis-Browne Splint</td>
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</table>
Ewing Sarcoma                Juvenile Rheumatoid Arthritis
Systemic Lupus Erythematosus (JRA)         Osteogenesis Imperfecta
(SLE)                             Denver Developmental Testing
Congenital Hip Dysplasia          Fractures
Isotonic                           Isometric
Isometric                          Arthrography
Arthroscopy                        Greenstick
Electrolymography                  Complete
Spica Cast                         Incomplete
Foot Drop                          Periosteal
Subluxation                        Simple
Milwaukee Brace  Compound (open)
Harrington Rod  Sequestrectomy

3. Classroom Objectives
3.1

a. Identify common congenital anomalies of the musculoskeletal system.
b. Discuss medical and surgical treatment modalities used for common musculoskeletal disorders.
c. Describe a plan of care for a child who is being treated medically for a musculoskeletal disorder which includes consideration of the families needs.
   Include:
   *** 1) Pathophysiology
   2) Diagnostic tests
   3) Pharmacologic agents
   4) Nutritional requirements
   5) Teaching/learning needs
   6) Nursing interventions
   7) Growth and developmental needs
   8) Coping mechanisms
   9) Legal/ethical issues
   10) Cultural aspects
   11) Psychosocial needs
d. Describe common surgical intervention and appropriate nursing care for the child with common bone and joint problems.
e. Identify common infectious processes which result in musculoskeletal disorders.
f. Discuss cultural considerations when caring for a child with a musculoskeletal disorder.
g. Describe types of traction equipment used for the child with a structural abnormality.
h. Identify types of fractures and discuss nursing principles involved in cast care, correctional devices and traction.

i. Describe nursing assessment of the musculoskeletal system.

j. Describe the significance of early assessment to the diagnosis of musculoskeletal dysfunction.

k. Specify the diagnostic tests used for assessment of the musculoskeletal system specific to the pediatric patient.

l. Specify common diagnostic tests and nursing responsibilities related to diagnostic procedures used in evaluation of the pediatric patient.

m. List the bone cancers found primarily in children and the related treatment modalities.

n. Discuss nursing interventions in children with bone cancer including the physical, emotional and financial needs.

o. Discuss nursing measures to prevent complications of immobility.

*** Not required of the VN student.

3.2 Learning Activities
   a. Review anatomy and physiology and normal human growth &
      development of the musculoskeletal system.
   b. Know terminology.
   c. Review assigned audio-visual material and computer programs on the musculoskeletal system specific to the pediatric patient.
   d. Read current articles as assigned by instructors.
   e. Review common congenital malformations, diagnostic assessments, treatments, medical and surgical management, and nursing interventions.
   f. Discuss in class the medical and surgical management of a patient with scoliosis; include medical and nursing interventions.

3.3 References
   a. Current textbooks
   b. Leifer, Intro to Maternity & Pediatric Nursing 5th ed. Review Growth & Development Chapters
   c. Anatomy & Physiology text

4. Clinical Objectives
a. Provide nursing care to an infant or child with a musculoskeletal problem.
b. Prepare a child and the family for a diagnostic procedure; observe when possible.
c. Provide pre and postoperative nursing care for a pediatric patient with a musculoskeletal disorder.
d. Observe a patient receiving physical therapy for a musculoskeletal disorder.
e. Assist and observe the therapist applying traction to a pediatric patient. Provide nursing care for the patient in traction.
f. Complete a nursing care plan for a pediatric patient with a musculoskeletal disorder.
g. Administer medications (oral and parenteral) to a patient with a musculoskeletal disorder.

*** h. Prepare a teaching plan for a patient and/or the family of a person with a long term or chronic musculoskeletal condition (i.e. scoliosis, CHD, muscular dystrophy).

i. Visit the physical therapy department of the hospital; observe treatments when possible.

*** Intravenous medications and teaching plans are not clinical assignments for the VN student.

5. **Skills Laboratory Requirements**

   a. Demonstrate musculoskeletal assessment.
   b. Demonstrate skeletal and skin traction.
   c. Demonstrate knowledge of:
      1) Thomas splint
      2) Hoffman Colles frame
      3) Buck's extension

References
Delmar—s Nursing Skills, pp 1389-1399