Musculoskeletal System Outline – Child

I. Osteogenesis Imperfecta

A. Definition- Rare genetic disorder in which bones fracture easily
   1. Inherited disorder (Autosomal dominant in majority) (Recessive-severe rare form)

B. Pathophysiology
   1. Abnormal precollagen
   2. Bone has large areas of osseous tissue with no architectural pattern –
   3. Several Main types
      Type II – most severe and lethal

C. Clinical Manifestations
   1. Bone fragility and fractures
   2. Hearing loss

D. Diagnosis
   1. History
   2. X-ray

E. Therapeutic Management
   1. Braces and splints
   2. Physical therapy
   3. Simple exercises
   4. Surgery
   5. Bisphosphonate with IV Pamidronate

F. Nursing Considerations
   1. Careful handling, Support when moving, turning, positioning
   2. Child abuse accusations
   3. Education
   4. Promote optimal development
   5. Genetic counseling
   6. Occupational planning

II. Legg-Calve – Perthes Disease (Coxa Plana)

A. Definition- Avascular necrosis of the femoral head
   – Aseptic Necrosis and infarction of femoral capital epiphysis
   – Degenerative changes
   – Flattening of upper surface of femoral head

B. Incidence- higher in boys, higher in whites. Ages 2-12

C. Pathophysiology- cause unknown but there is disturbance of circulation to the femoral capital epiphysis thus causing ischemic necrosis of the femoral head

D. Stages (4)
   1. Avascular stage
   2. Fragmentation or Revascularization stage

3. Reparative stage
4. Regenerative stage

E. Clinical Manifestations
1. Intermittent appearance of limp on affected side
2. Pain
3. Limited ROM

F. Diagnosis
1. X-ray

G. Therapeutic Management
1. Goal: to keep femur in acetabulum
2. Initially: decrease inflammation and restore motion with rest
3. Later: strengthen supporting connective tissue and assist with bone formation with active ROM
4. To contain the head of the femur: non weight bearing devices like abduction braces, or leg casts or weight bearing devices like ambulation splints.
5. Without containment: Femur head remolds into mushroom shape, hip unstable
6. Surgery- reconstruction

H. Prognosis- outcome is related to early and efficient treatment and age of child

I. Nursing Considerations
1. Nurses are often the first to identify
2. Education
3. Family

II. <u>Slipped Femoral Capital Epiphysis</u>

J. Definition- slipping of the femur head posteriorly and inferiorly

K. Incidence
1. Occurs most frequently in pre-adolescence
2. Obese children
3. Very tall, thin rapid growth

L. Diagnosis
1. X-ray
   a. Widening of the growth plate
   b. Slipped epiphysis at femoral head
2. Physical exam

M. Clinical Manifestations
1. Pain
2. Limp
3. X recent trauma with epiphyseal damage
4. Suspect on a child who is…..

N. Therapeutic Management / Nursing Considerations
1. Treat as early as possible, Treatment varies with degree of displacement
2. Surgical

O. Prognosis

III. <u>Scoliosis</u>

P. Definition- lateral (sideways) curvature of spine, spinal rotation causing rib asymmetry.

Q. Pathophysiology
1. Most no apparent cause (idiopathic)
2. Occurs with other diseases (CP, polio, musc dystrophy
3. Genetic?
4. S Shaped curve of the spine

R. Clinical Manifestations
1. Seen around age 10
2. No pain until severe

S. Diagnostic Evaluation
1. Standing child = wearing only underpants
2. Bend forward at the waist – trunk parallel to floor , arms hang free
3. X-ray- definitive

T. Therapeutic Management
1. Current
   a. Observe
   b. Orthopedic intervention
   c. Surgical
2. Bracing
   a. Successful in halting or slowing progression of most curvatures while child reaches skeletal maturity
   b. 2 main types
      1.) Boston brace or Wilmington Brace
      2.) Thoracic Lumbar Sacral Orthotic (TLSO)
      3.) Brace education:

F. Surgical Repair
1. May be required for severe curves- > 45 degrees
2. Luque segmental spinal instrumentation- posterior wires are threaded beneath laminae of each vertebrae and tightened around rods resting along transverse processes so that spinal column is stabilized by transverse traction on each vertebrae
3. Post-op care- maintain proper body alignment

U. Nursing Considerations

<u>Juvenile Rheumatoid Arthritis</u>

V. Definition- chronic inflammation of synovium and joint effusion
- Idiopathic chronic inflammation of synovium and joint effusion
- Leads to erosion, destruction and fibrotic changes of articular cartilage
- May develop adhesions between joint surfaces and ankylosis of joints if persists

W. Incidence- peak of onset around 1-3 years of age

X. Etiology- unknown

Y. Clinical manifestations
   1. Affected joints
   2. “Flare up” often precipitated by:
   3. Complications associated with disease:

Z. Diagnosis
   1. Exclusion
   2. ESR
   3. Xray

AA. Therapeutic Management
   1. No cure
   2. Goals
   3. uveitis – need ophthalmologist

BB. Medications
   1. NSAIDS – naproxen, ibuprofen
   2. DMARDS- disease modifying antirheumatic drugs (methotrexate) which can be taken with NSAIDS to slow progression
   3. Biologic Agents- etanercept (Enbrel) and adalimumab (Humira) which reduce inflammation and prevent joint damage
   4. Corticosteroids- prednisone (use for shortest time possible because they can affect the child’s growth)

CC. Surgery-

DD. Prognosis- rarely life threatening

EE. Long term care
   1. Effects of the disease are manifested in every aspect of the child’s life
   2. Pain
   3. Promote general health
   4. Stress posture and good body mechanics
   5. Attend school even if some pain
   6. Education
   7. Heat
   8. Morning routine sample