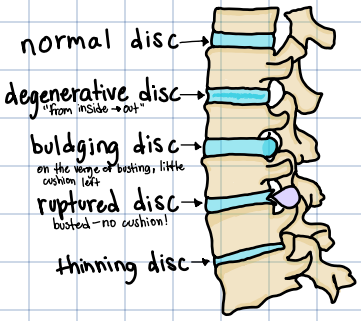
back problems

DISK INJURY

- Compressive loads cause disks to stretch, vertebrae are compressed & may fracture
  - > caused by:
    - heavy physical labor
    - strenuous exercise
    - weak core muscles
    - repeated stress
    - degeneration ☉ aging



Assessment Findings:

- Cervical: pain radiates to shoulders, arms, & hands
- Lumbar: muscle weakness, spasms, to lower back ☉ radiation to hip & leg (sciatica)

Treatment

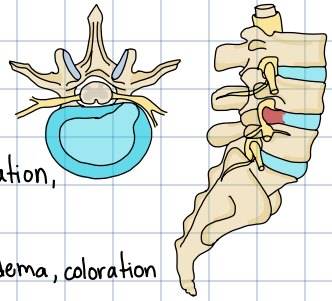
- Stabilization (brace)
- Physical therapy
- Surgical intervention

Diagnostic studies:

- X-ray
- CT
- MRI

Disk surgies:

- Disectomy: removal of the herniated disk tissue
- Laminectomy: excision of part of the vertebrae (lamina) to remove the disc
- Laminotomy: division of the lamina of the vertebrae
- Spinal fusion
  - > w/instrumentation: metal rods used to straighten &/or fuse spine together
  - > w/arthrodesis: placement of bone grafts between vertebrae, results in bony union (rigid)



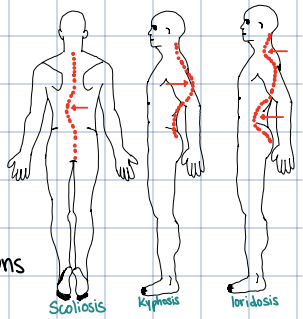
Post-op care:

- Head-to-toe assessment
  - > Neuromuscular: movement, sensation, reflexes
  - > Neurovascular: perfusion, clots, edema, coloration
- Dressing & drains
  - > COAT*
- Pain control
  - > epidural
  - > NSAIDs
  - > narcotics
  - > anti-spasmotics
- Bed rest
  - > keep in mind possible complications from immobility
- Mobility (when appropriate)
  - > Spine supported & aligned
  - > pillows, mattress, fracture bedpan

Post-op care cont.:

- CSF leakage
  - > Severe headache* pt gets no relief, even ☉ the post-op pain meds
  - > Clear/yellow fluid
    - frequent assessment of dressings & drains
  - > Positive for glucose
    - dip-stick test
- Urinary retention
  - > Cauda equina syndrome - damage to the nerve that signals our brain that our bladder is full, pt holds urine which, over time, can lead to more serious issues
  - > Foley
  - > Positioning - gravity is your friend, stand-up!
- Paralytic ileus
  - > may occur several days post op
  - > do not strain for BM

SCOLIOSIS



- Curvature of the spine >10°
- Idiopathic: Unknown cause, most common
- Congenital: May have other anomalies
- Neuromuscular: due to medical conditions

Clinical manifestations:

- More common in females
- Curvature of the spine
- More common to develop in adolescence
- Prominent shoulder blade
- Uneven hips or shoulders

Diagnostics:

- School screenings
- X-ray - measures Cobb angle
- Scoliometer - measure rib hump
- Adam forward bend test
- MRI

Classification

- Mild: <20°, observeure every 3-6 months
- Moderate: 25°-45°, bracing 12-23 hrs/day
- Severe: >50°, surgical correction

Treatment:

- Bracing (25°-45°): TLSO - thoracolumbar sacral brace, Milwaukee, Boston
- Surgery for >50°: spinal fusion

Post-op care:

- Neuro checks, bracing for several months, limited activity for 6-8 months, no bending or twisting, PT, wound treatment

fractures

Cause:
- Trauma
- Pathological
  - old age, brittle bone disease, cancer, etc.
- Open: breaks skin
- Closed does not break skin

Clinical manifestations:
- Pain
- Decreased ROM
- Limb rotation
- Deformity/shortening of limb
- Bruising
- Crepitus
- Swelling

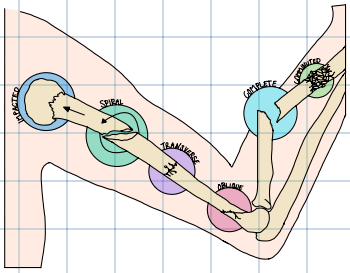
Diagnostics
- XR
- CT
- MRI

Emergency treatment:
- Splint it AS IT LIES
- Assess neurovascular status before & after splinting
- Seek medical treatment

Closed Reduction:
- Manual realignment
- Bandages/splints
- Casts
- Traction: skin, skeletal

Cast care:
- Weight bearing as prescribed
- Do not cover fresh plaster cast - heat builds up & causes burns
- Avoid direct pressure during drying period
- Handle c̄ open palm
- Never stick object under cast
- Report foul smells
- Keep plaster casts dry
- Monitor skin integrity

Traction:
- Application of a pulling force to an injured part of the body while countertraction pulls in the opposite direction
- Skin vs skeletal
- Purpose
  - prevent or reduce muscle spasm
  - immobilization
  - reduction
  - treat a pathologic condition



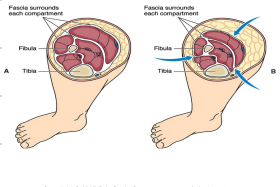
Nursing Care:
- Neurovascular assessment
- Pin sites
- Traction equipment
  - CAROL P SMITH
    - Continuous Alignment Resistant Opposing traction Line of pull Pulse Sensation Motion Inner space (webbing of fingers & toes) Temperature Hue (perfusion)

Surgical management
- Open reduction c̄ internal fixation
  - pins, plates, intramedually rods, & screws
  - surgically inserted at the time of realignment
- External fixation
  - Metallic device composed of pins that are inserted into the bone & attached to external rods

Complications of Fractures
- Nonunion
- Infection & osteomyelitis
- Neurovascular compromise
- Thromboembolic complications
- Hemorrhage
- Compartment syndrome
- Fat embolism

Compartment syndrome
- Elevated intracompartmental pressure w/in a confined myofascial compartment compromises the neurovascular function w/in that space
- Two basic etiologies
  - decreased compartment size
  - increased compartment content

Treatment:
- Do not apply ice or elevate above heart level
- Remove/loosen bandage & bivalve cast
- Traction weight reduction
- Surgical decompression - fasciotomy



Fat embolism: *this on emergency*
- Originates in bone when fat globule is released into blood stream
- Can occur w/in first 48-72 hrs, S+S similar to PE
- Petechial rash over upper chest & neck
- X-ray may show white out

Nursing Care:
- Provide emergency care
- IV hydration to prevent hypovolemic shock
- Supplemental O_2
- VS monitored closely
- Notify HCP
- Prepare for possible intubation

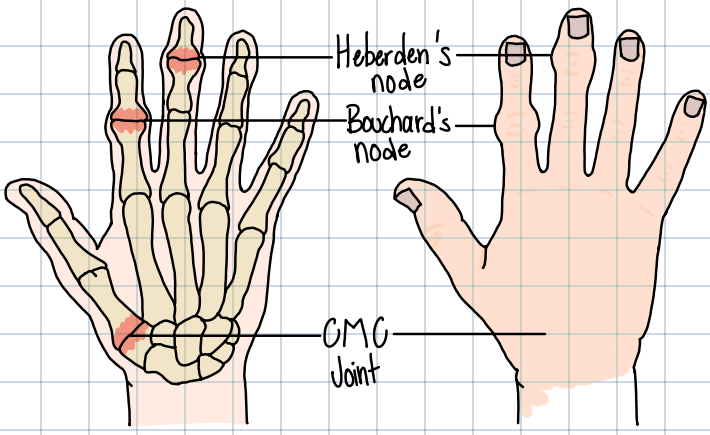
OSTEOARTHRITIS
osteoarthritis

Pathophysiology
- Formation of new joint tissue in response to cartilage destruction
- Articular cartilage/joints deteriorate
- Joint space narrows, bone spurs develop
- Joint deformities, pain, immobility

Risk Factors
- event or condition that directly damages cartilage or causes joint instability
- aging
- obesity
- injury to joint
- wear & tear on synovial joints

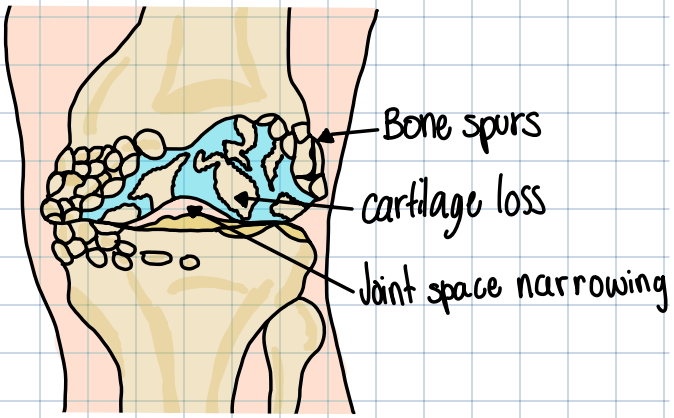
Signs & Symptoms
- Joint pain
  - > intensifies after physical activity
  - > worsening pain c̄ lower barometric pressure
  - > progressive pain to disability & loss of function
- Stiffness
- Crepitation
- Asymmetric
- Deformity
  - > Heberden's & Bouchard's nodes
    - bony nodes of joints & fingers

H- more distal
B- proximal



Diagnostic tests
- X-ray
- CT
- MRI
- Synovial fluid analysis
  - > to differentiate OA from other inflammatory arthritis
  - > OA fluid remains clear/yellow c̄ no signs of inflammation

Interventions
- No cure
- Balance rest & activity — these pts need LOW weight bearing
- weight control
- Medications
  - > Acetaminophen
  - > NSAIDs
  - > Duloxetine (Symbalta)
  - > Topical NSAIDs
- Cortisone injections
- Lubrication injections
- Physical therapy
- Heat or cold (use for MUSCLE soreness)
- Surgery
  - > joint replacement (pt normally ends up c̄ arthritis in another place after replacement)



OSTEOPOROSIS

osteoporosis

Osteoporosis

- Metabolic disease that causes bone demineralization
  - loss of calcium & phosphorus salts
  - bone reabsorption increases & bone formation decreases
- Higher risk for fractures due to more fragile bones
- Primary Osteoporosis
  - most commonly occurs in women post-menopause
- Secondary Osteoporosis
  - immobility, malnutrition
  - long term corticosteroid use, thyroid reducing medications

Additional Risk Factors

- Smoking
- Insufficient calcium intake
- family history
- gender (female is higher risk)
- early menopause
- sedentary lifestyle
- thin small stature
- Caucasian or Asian
- age
- excessive alcohol use

Assessment

- Back, pelvic, and hip pain when lifting, twisting, weight bearing
- Back pain on palpation
- Client could become shorter
- Kyphosis

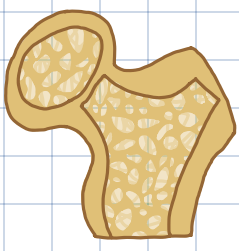
assessment

- SAFETY*****
  - Create safe environment for ambulation (think rugs, cords, furniture placement, assistive devices, etc.)
- Encourage ROM exercises
- Gentle handling with ambulation, repositioning, etc.
- Strengthen abdominal muscles
- Diet
  - High in calcium, protein, vitamin C and D, iron
  - Avoid alcohol and coffee
- Increase fluid intake unless contraindicated
  - Prophylactic to prevent kidney stones due to increased calcium intake

Nursing intervention

- Calcium
- Vitamin D
- Bisphosphonates
  - Reduce the rate at which your bones breakdown
  - Ex: alendronate, zoledronic acid

pharm



TALIPES EQUINOVARUS

talipes equinovarus

CONGENITAL CLUBFOOT

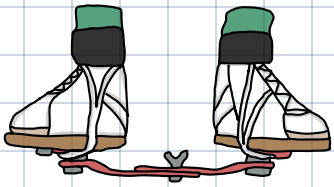
- Congenital Talipes Equinovarus
- Talipes varus - bending inward
- Talipes valgus - bending outward
- Talipes equinus - heel pulled up
- Talipes calcaneous

Clubfoot

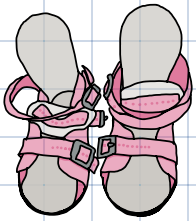
- The cause of clubfoot is unknown. Babies c clubfoot are usually otherwise healthy
- In clubfoot, the foot appears twisted & can even look as if it's upside down. Despite its appearance, clubfoot itself doesn't cause any pain or discomfort
- Treatment is usually successful
- Correction best in newborn period
- Manipulation & serial casting begins immediately & continues for 8-12 wks, cast need changing every 1-2 wks due to rapid growth
- Parents need to perform passive ROM to foot & ankle several times a day for several months following cast removal
- Infants need to sleep in Denis Browne splints or wear corrective shoes for up to 1 year
- Surgery is performed when not able to achieve full correction c casting
- May be done between 4-12 months which involves realigning the bones in the foot c steel pins & then casted for 6-12 wks

Nursing Diagnosis

- Impaired physical mobility
- Impaired parenting related to emotional reaction following birth of an infant c a physical defect
  - > remeber, the parent's vision of the sweet & perfect "baby phase" was just shattered, they'll need help & time to adjust
- Risk for impaired skin integrity related to cast wear
  - > infant skin is already delicate, check often for moisture, DO NOT stick anything inside of the cast to get something out - you could hurt the skin/cause further damage
- Deficient knowledge: deformity, treatment & home care



Denis Browne splint vs.



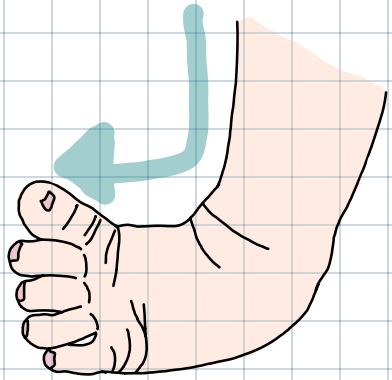
Corrective shoes

Nursing Care

- Care post casting & post surgical repair:
  - > Neurovascular checks every 2 hrs
    - color, temp, edema, pain, etc
  - > Observe for any swelling around cast edges
    - cast may need to be loosened, could be having a tourniquet effect
  - > Elevate ankle & foot on pillows
  - > Monitor drainage on cast
    - COAT
  - > Pain management
  - > Appropriate distraction
    - age appropriate show, movie, toy, activity, etc

Education

- Change diapers frequently to prevent soiled diapers from touching cast
- Sponge bathe infant (to keep cast dry
- Teach to evaluate crying episodes carefully (caused by circulatory compression)
  - > baby is going to cry, they have either cast/brace/splint that makes it harder for them to move & get comfortable, but it's important parents/caregivers don't dismiss all fits, baby could be trying to communicate that something is wrong or hurting
- Reinforce need for passive ROM (several times a day for several months
- Reinforce use of Denis Browne splints or corrective shoes
- Discuss options for clothing that works better c cast
  - > zip-up clothes, button up, no onsies, seperate shirt & pants, etc.
- Maintain skin integrity



HIP DYSPLASIA

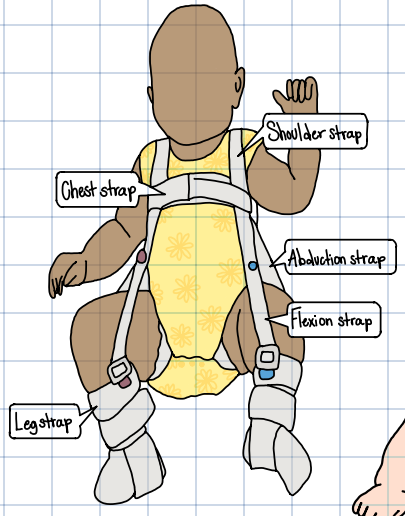
hip dysplasia

Risk factors

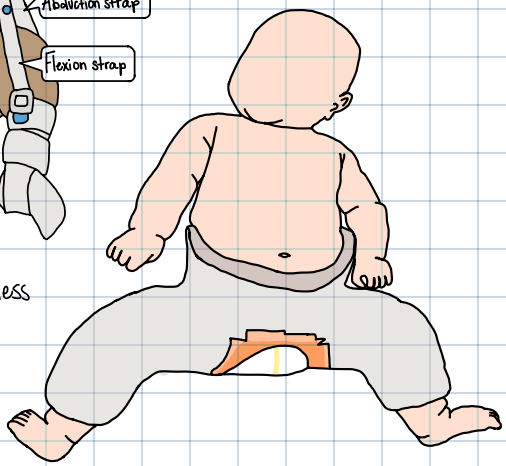
- Family history
- Prenatal conditions
- Frank breech position
- Maternal hormones (relaxin & estrogen)
- Twins
- Large infant size
- Diagnosis should be made in newborn period
- Treatment that is started before 2 months has the best success
- All breach births have ultrasound of hips before 6 or hip x-ray after 6 monts

Treatment

- Correction involves positioning hip in a flexed, abducted & externally rotated position to press head of femur against acetabulum & deepens its contour
- For infants less than 3 months
  - Pavlik harness most common, worn for 3-6months, may or may not be removed for bathing
- For infants older than 3 months
  - Skin traction followed by spica cast
- Child older than 18 months
  - Requires traction, operative reduction & rehabilitation



Pavlik harness



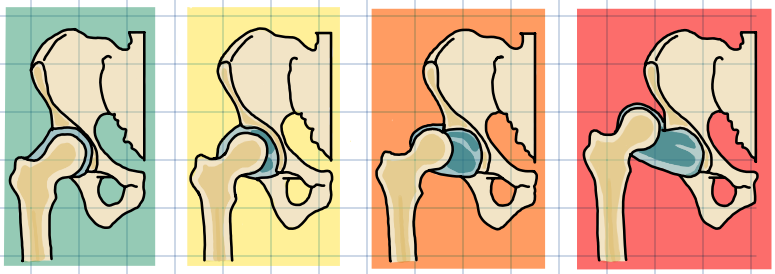
Spica cast

Assessment

- Newborn & infant period
  - Shortening of affected limb
  - Allis sign - while in supine position, thighs flexed 90° toward the abdomen will show unequal knee height
  - Uneven # & placement of skin folds on posterior thigh
  - Restricted abduction of the hips after 6-10wks of age
  - With bilateral dislocation, may have a wide peritoneum
  - Positive Ortolani or Barlows signs up to 2-3months of age
- Older children
  - Affected leg shorter than the other
  - History of delayed walking
  - Limp & toe walking
  - Trendelenburg's sign - when bearing weight on affected side, pelvis tilts downward on normal side instead of upward which is normal
  - Waddling gate ≈ bilateral dislocation
  - Lordosis ≈ bilateral dislocation

Education

- Pavlik harness
  - teach proper application
  - sponge bath
  - assess skin under the straps daily for irritation & redness
  - T-shirt & knee socks should be worn under brace
  - diapers should be placed under straps & changed w/out taking harness off
  - for any abduction device there will need to be modification of car seat & positioning for nursing & eating
  - parents need to make sure the child has adequate stimulation to encourage upper extremity movement (age specific toys)



Normal | Dysplasia | Subluxation | Dislocation

OSTEOGENESIS IMPERFECTA

osteogenesis imperfecta

Osteogenesis Imperfecta

- Will have pathologic fractures due to connective tissue & bone defects
- Occurs in several forms ☐ variable degrees of severity
- Bones are so fragile that fractures result from trauma but also from simple walking or pressure from birth
- Affects boys more than girls & occurs 1 in every 30,000 live births
- With this diagnosis the child should not be confused ☐ fractures from abuse

Pathophysiology

- a biochemical defect in collagen production
- calcium & phosphorus is normal but there is abnormal precollagen type 1 which prevents formation of collagen, the major component of connective tissue
- Bone consists of large areas of osseous tissue & increased numbers of osteoblasts
- Genetically transmitted generally as an autosomal dominant inheritance pattern

Assessment

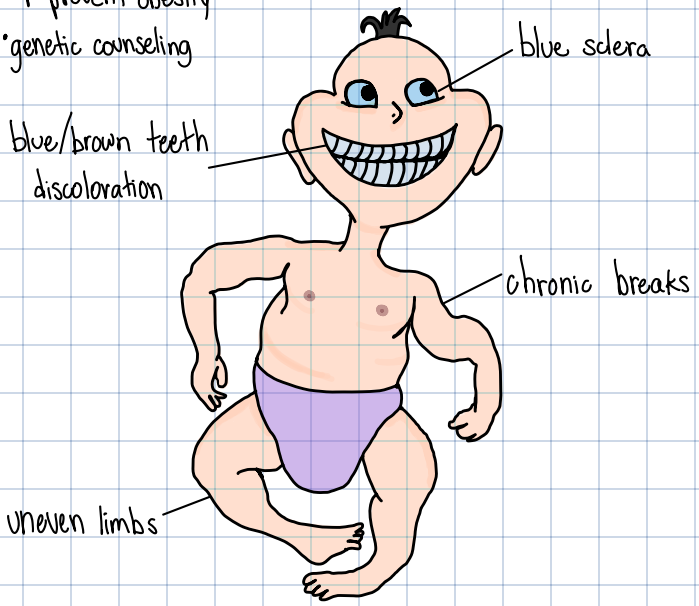
- Multiple & frequent fractures, some may be present at birth
- As child grows multiple breaks tend to cause limb & spinal column deformities, interfering ☐ alignment or growth
- Other clinical manifestations
  - BLUE sclera
  - thin soft skin ☐ easy bruising
  - increased joint flexibility
  - weak muscles
  - short stature
  - conductive hearing loss
  - may have dentiogenesis imperfecta - hypoplastic teeth ☐ opalescent blue or brown discoloration

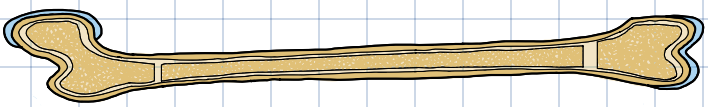
Nursing Care

- provide safe environment, dry floors, remove objects that could cause falls
- Handle child gently, avoid lifting by a single arm or leg, use a blanket for extra support when lifting
- Never hold by the ankles when being diapered, but lift gently by slipping a hand under buttocks
- lightweight leg braces, splints, casting, & physical therapy may be helpful
- Medications
  - calcitonin
  - biphosphonates to increase bone mass
  - growth hormone to stimulate growth

Education

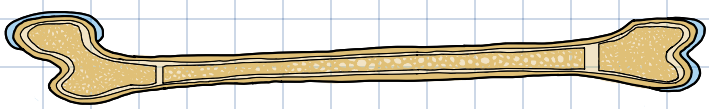
- Encourage lifestyle that meets ☐ growth & development but minimizes trauma risk
- teach how to support when bathing, dressing, & moving
- encourage exercise such as swimming, to improve muscle tone & prevent obesity
- genetic counseling





Normal bone

VS.



Osteogenesis imperfecta