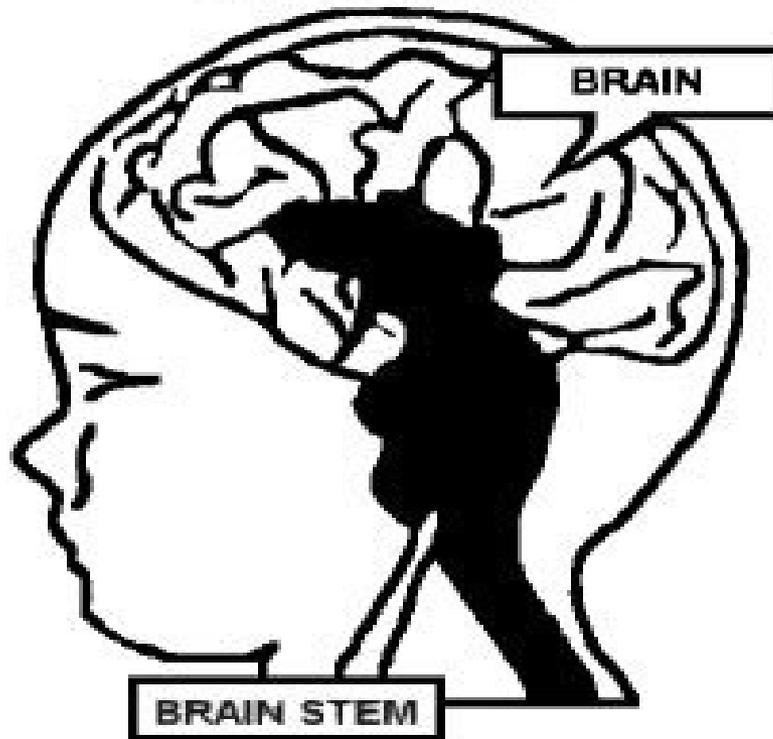


# Neurological System

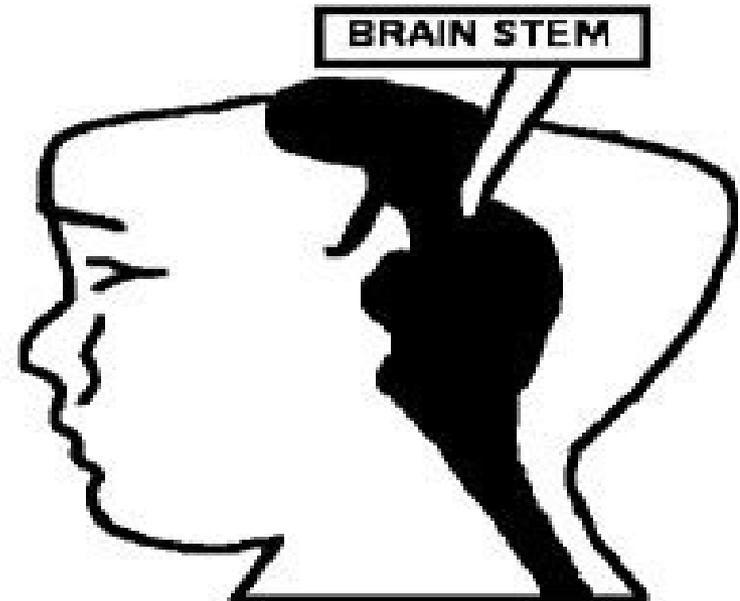
Newborn

# Anencephaly- NTD

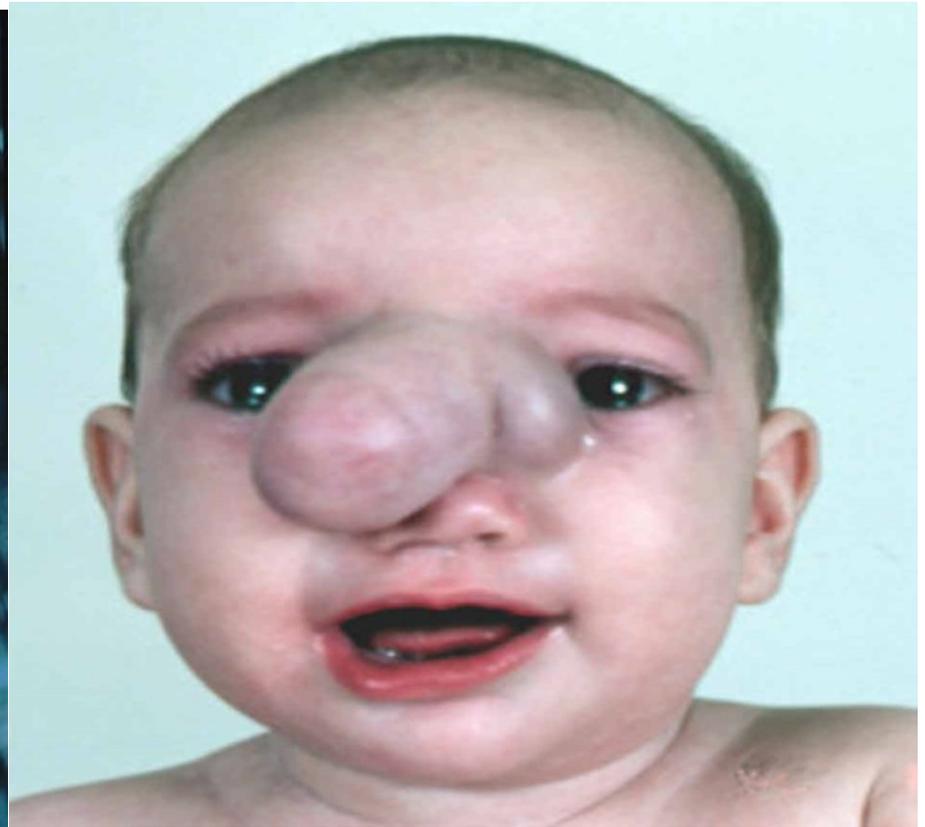
**NORMAL INFANT**



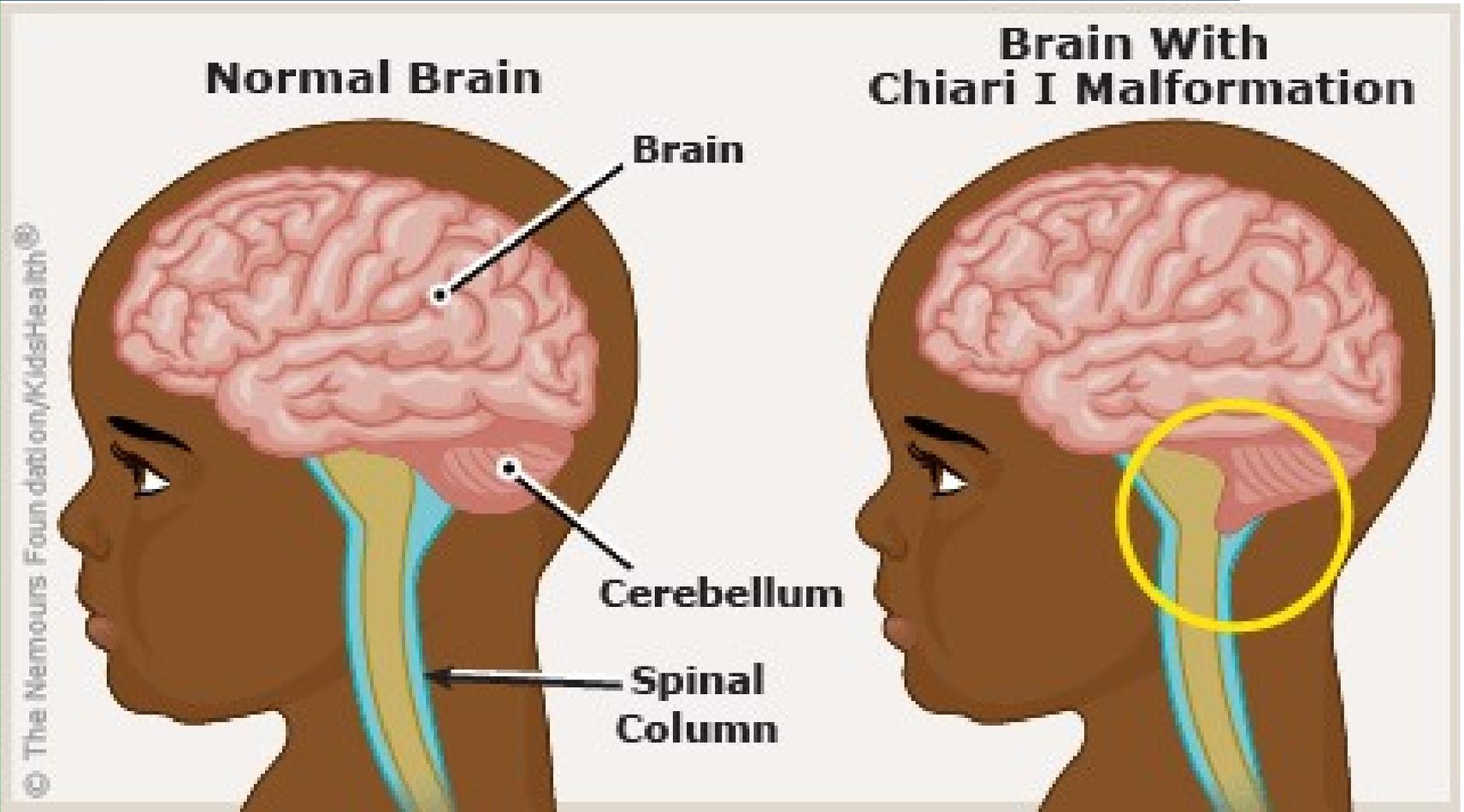
**ANENCEPHALIC INFANT**



# Encephalocele- NTD

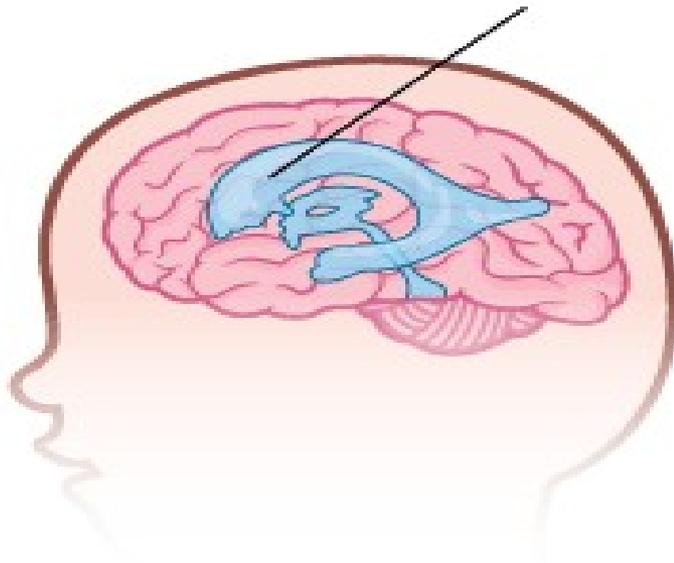


# Chiari Malformation

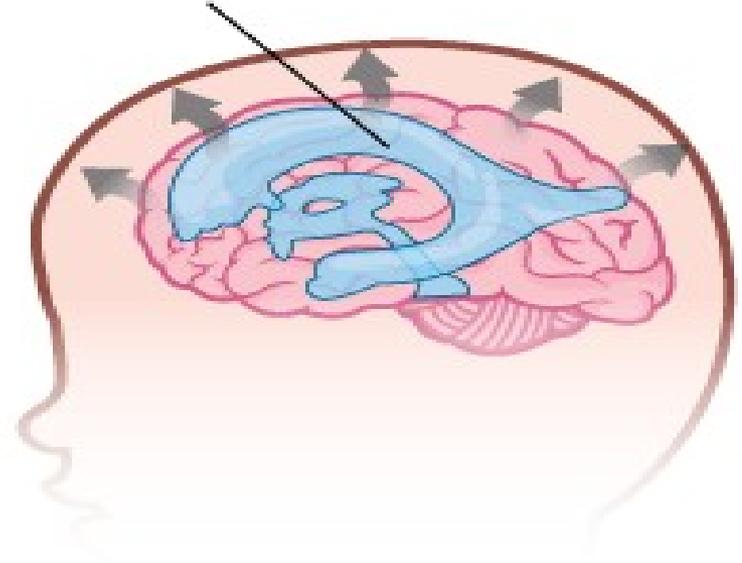


# Hydrocephalus

## Fluid-filled Ventricles in the Brain



**Healthy Ventricles**



**Enlarged Ventricles  
(Hydrocephalus)**

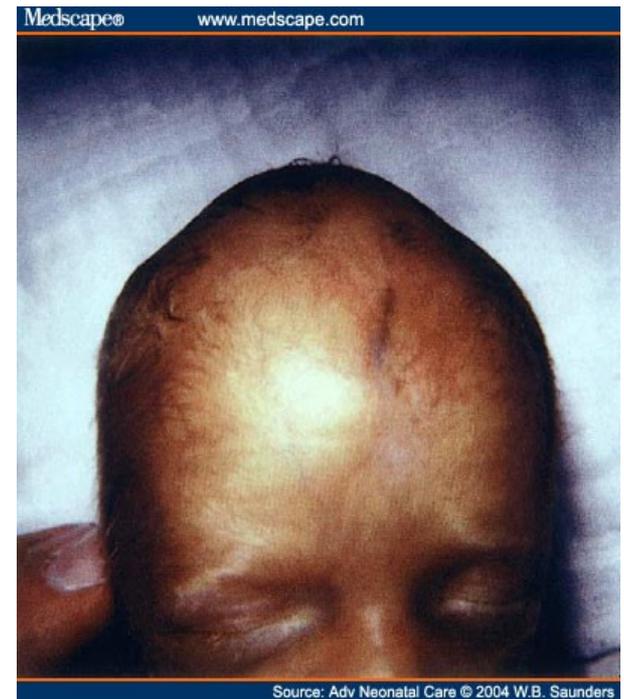
# Hydrocephalus in Children

- × Congenital= present in utero or at birth
- × Acquired= at birth or anytime after
- × Causes of acquired hydrocephalus:
  - × Tumors
  - × Developmental malformation
  - × Infection
  - × Trauma

# Hydrocephalus

## Clinical Manifestations

- Increased head circumference
- Bulging fontanel
- Sunsetting eyes
- Sluggish pupils
- Prominent scalp veins
- Suture lines separated



- “sunsetting sign”



Enlarged head



# Increasing Intra-cranial pressure

- Drowsy
- Irritable
- Hyperactive reflexes
- Shrill cry
- Poor feeding

# Hydrocephalus Diagnosis & Management

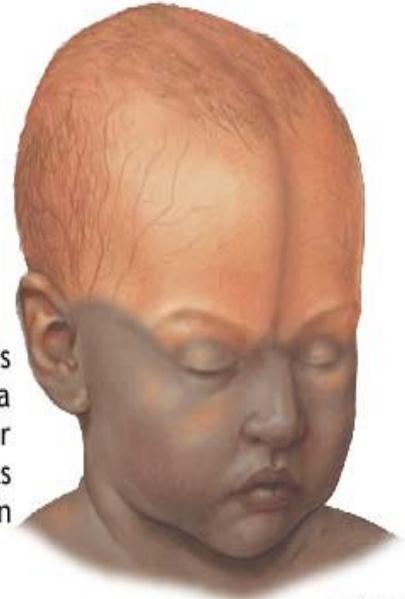
## Diagnosis

- Head circumference measurements
- CT/ MRI
- Transillumination

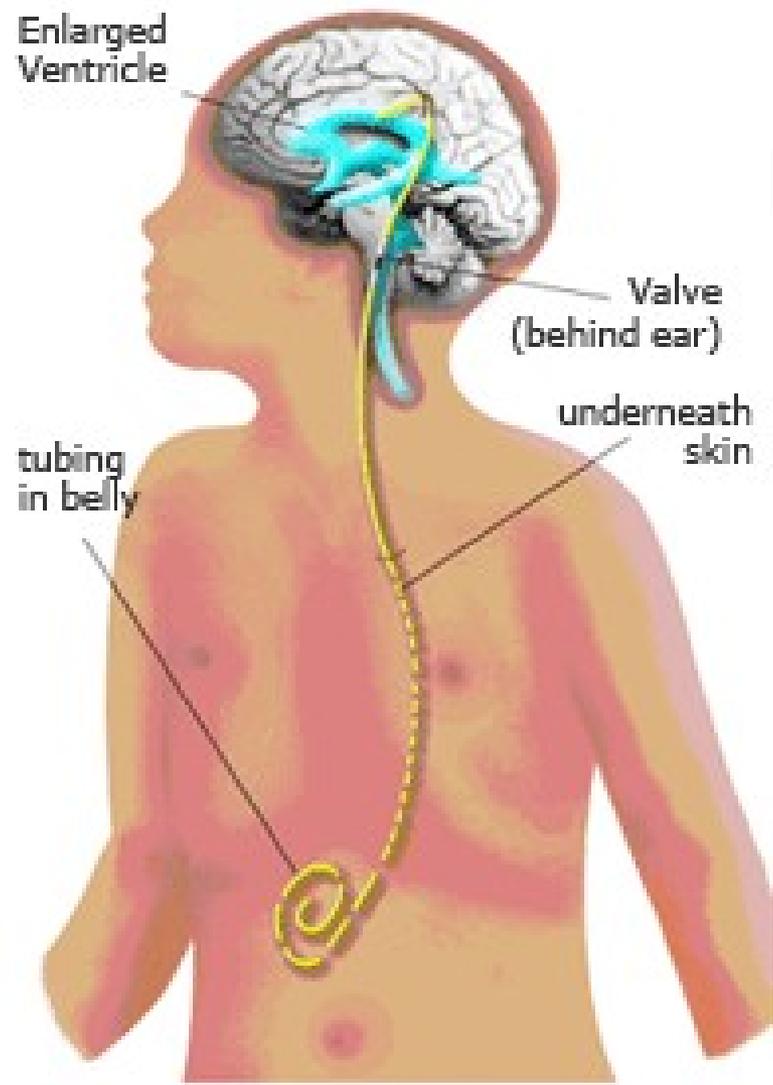
## Management

- Early recognition
- Surgery/Shunt
- Ventriculostomy

A bright light is shined through a body cavity or organ such as the brain



# Ventriculoperitoneal Shunt



# Nursing considerations

- Pre and Post –op shunt care
  - Assess
  - Positioning
  - Antibiotics
  - Skin care
  - Family support and teaching

# Spina Bifida

## Myelodysplasia

### 2 Types

- Spina bifida occulta
- Spina bifida cystica

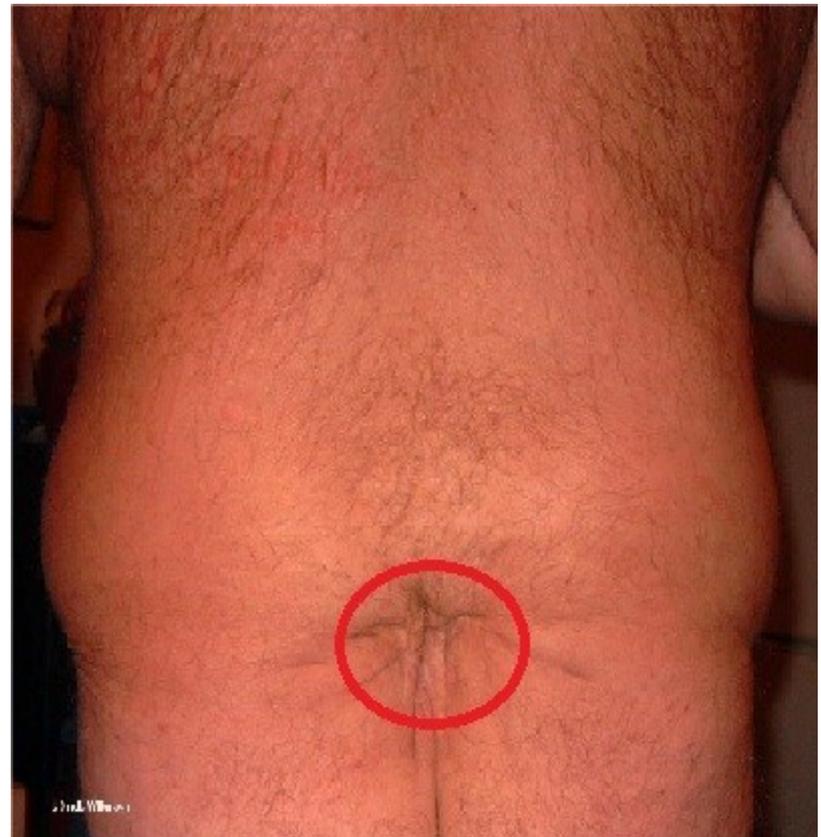
# Spina Bifida Occulta

S/S occur most of the time at L5 S1 level

- May not be easily seen/apparent
- Dimpling or skin depression
- Abnormal hair tufts
- Soft subcutaneous lipoma (collection of fat)
- Port wine angiomatous nevi

# Spina Bifida Occulta

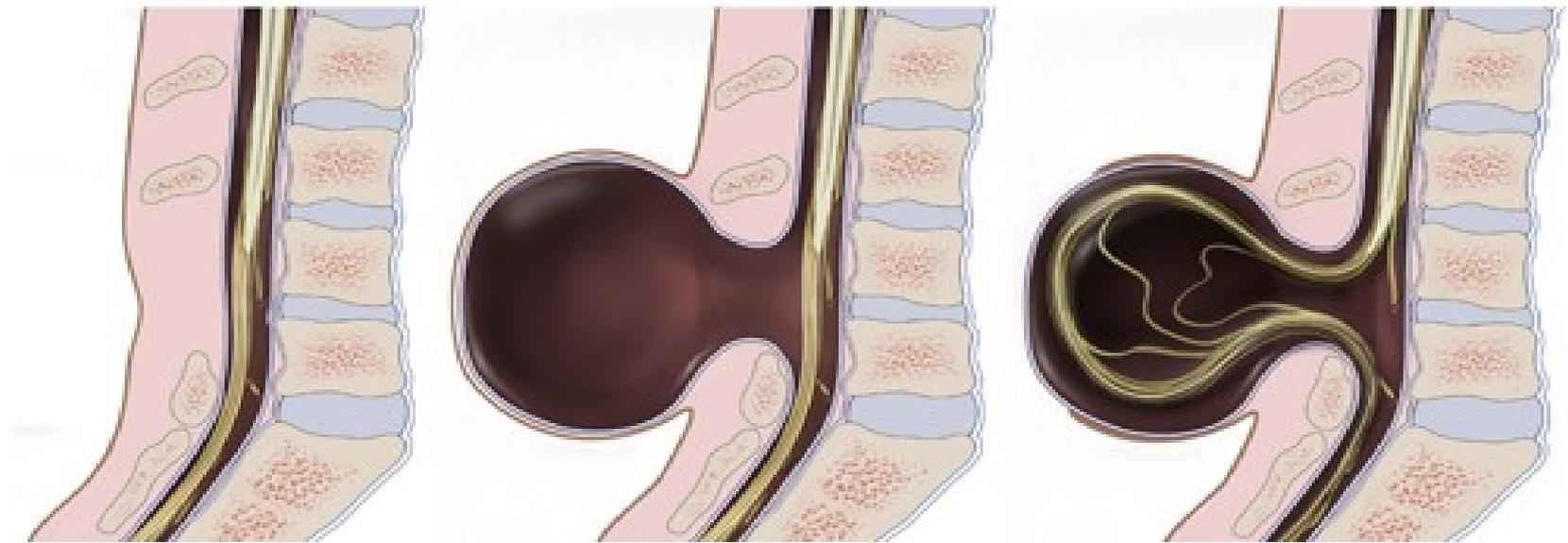
- Neuro S&S
  - Foot weakness
  - Bowel/Bladder possibly
  - Defect on radiography
- Treatment
  - None initially
  - May need surgery later



# Spina Bifida Cystica

- Meningocele
  - meninges and spinal fluid, but no nerves
- Myelomeningocele- *aka the real spina bifida*
  - meninges, spinal fluid  
and nerves

# Spina Bifida Types



Spina bifida occulta

Meningocele

Myelomeningocele

# Spina Bifida Cystica

Meningocele

Myelomeningocele



# Therapeutic Management Meningocele/Myelomeningocele

- Initial Care
  - Protection of the sac from trauma (can tear easily), avoid rectal temperatures
  - Prevention of infection (as sac has thin membrane and often no skin covering)
  - Positioning (Prone)
- Multidisciplinary Approach
  - Neurosurgery, Neuro, Peds, Urology, Social Service, Ortho, Rehab, PT, OT, Nursing

# Orthopedic Considerations

- Goal: best possible Ambulatory function



# GU function and Spina Bifida

Neurogenic bladder

- Urinary incontinence
  - clean intermittent caths
- Urinary tract infections
  - quick vigorous treatment of UTI's
- Impaired renal function
  - Due to renal insufficiency

# Spina Bifida & Bowel Function

- Fecal incontinence
  - diet modification
  - regular toilet habits
  - prevention of constipation/impaction
  - good skin care

# Nursing Considerations

- Delivery
- Care of the cyst
- Positioning
- Post operative care
- Family assistance
- Family considerations
- Latex allergies
- Folic acid for future pregnancies

