Spina Bifida

- Spina bifida denotes a condition in which there are congenital abnormalities of the vertebral elements in association with the extrusion of normal neural elements.

- People with spina bifida present with various lower-extremity motor and sensory deficits concomitant with variable bowel and bladder control, hydrocephalus, and other medical problems.

Spina Bifida

- The resultant condition impinges on normal motor development and may alter fine-motor, perceptual, linguistic, and cognitive function.

- This is not a static disorder, but one in which progressive neurological and other organ system dysfunction may occur over time in up to 40% of the people with spina bifida.
Spina Bifida Occulta (hidden)

- This is a very mild and common form and rarely causes disability
- There is a slight deficiency in the formation of (usually) one of the vertebrae
- It may have visible signs of a dimple or small hair growth on the back.
- Spina bifida occulta may be detected by x-ray when, for example, investigations of back injury are being made
- Estimates vary, but between 5% and 10% of people may have spina bifida occulta

Spina Bifida Cystica - Meningocele

- In this form, the sac contains tissues that cover the spinal cord (meninges) and cerebro-spinal fluid (the fluid that bathes and protects the brain and spinal cord)
- The nerves are not usually badly damaged and are able to function, therefore, there is often little disability present
- This is the least common form

Spina Bifida Cystica - Myelomeningocele

- Here the cyst not only contains tissue and cerebro-spinal fluid, but also nerves and part of the spinal cord
- As a result, there is always some paralysis and loss of sensation below the damaged region
- The amount of disability depends very much on where the spina bifida is and the amount of nerve damage involved
- Many people with this condition have bowel and bladder problems
Incidence, Embryology, and Etiology of Spina Bifida

- The incidence of spina bifida manifesta is the US is approximately 4.6 cases per 10,000 births
- The lesion is most common in White females
- The undefined insult to the embryo occurs at 21-26 days gestation when the neural tube that will become the CNS is invaginating

Incidence, Embryology, and Etiology of Spina Bifida

- Nonfamilial etiologies proposed include exposure to potato blight, vitamin B and mineral deficiencies, subfertility, twinning, high sound intensity exposure, ethanol, and the use of phenytoin and valproic acid
- Spina bifida is only partially hereditary
  - However, once there has been an affected pregnancy, there is an increased risk of further spina bifida pregnancies
  - The risk of an adult with spina bifida having a child with a similar condition is approximately 3% or 1 in 35

Therapeutic Assessment and Intervention

- Assessment should include evaluation and description of joint contractures and deformities, neurological level and muscle power, pressure sores, mobility, and self-care skills
- Treatment includes gentle, active, assistive range-of-motion exercises for the lower extremities, strengthening of innervated musculature, transfer training, gait training, and instruction in self-care skills
Vocational Implications

- Despite good cognitive skills and educational opportunities, it is not uncommon for people with spina bifida to remain in the homes of their parents past maturity.
- This may not only be a sign of prolonged emotional dependence, but also may be an economic necessity, as only 20% of adults with spina bifida are likely to be employed.
- The survival rate for the majority of people with spina bifida now exceeds 90%.

Additional Resources and Information from the Web

- Spina Bifida Association of America ([www.sbaa.org](http://www.sbaa.org))
- Association for Spina Bifida and Hydrocephalus ([www.asbah.org](http://www.asbah.org))
- Easter Seals ([www.easter-seals.org](http://www.easter-seals.org))
- JAN – Accommodation Ideas for Individuals with Spina Bifida ([www.jan.wvu.edu/soar/other/spinabifida.html](http://www.jan.wvu.edu/soar/other/spinabifida.html))