FIG 30-5 Midline defects of the osseous spine with varying degrees of neural herniations. **A.** Normal. **B.** Spina Bifida Occulta. **C.** Meningocele. **D.** Myelomeningocele.

Box 30-4

Significant Neural Tube Defects

Cranioschisis: A congenital skull defect through which various tissues protrude

Exencephaly: Brain totally exposed or extruded through an associated skull defect; fetus usually aborted

Anencephaly: If fetus with exencephaly survives, degeneration of the brain to a spongiform mass with no bony covering; incompatible with life usually beyond a few days to weeks

Encephalocele: Herniation of brain and meninges through a defect in the skull, producing a fluid-filled sac; can be frontal or posterior

Rachischisis or **spina bifida (SB):** Fissure in the spinal column that leaves the meninges and spinal cord exposed

Meningocele: Hernial protrusion of a saclike cyst of meninges filled with spinal fluid (see Fig. 30-5, *C*)

Myelomeningocele (meningomyelocele): Hernial protrusion of a saclike cyst containing meninges, spinal fluid, and a portion of the spinal cord with its nerves (see Fig. 30-5, *D*)

In the United States, rates of NTDs have declined from 1.3 per 1000 births in 1970 to 0.3 per 1000 births after the introduction of mandatory food fortification with folic acid in 1998. One concern is that NTD rates have not decreased among Hispanic and non-Hispanic white mothers since 1999 (Centers for Disease Control and Prevention, 2009). In 2005, the rates for spina bifida (SB) were estimated by the Centers for Disease Control and Prevention to be