

procedures intended to reduce contracture deformities, body position, gastroesophageal reflux, and physical therapy ([McKearnan, Kieckhefer, Engel, et al, 2004](#)). Therefore, pain management is an important aspect of the care of children with CP. Decreasing spasticity with botulinum toxin A may also result in less pain from spasms ([Lundy, Lumsden, and Fairhurst, 2009](#)).

The neurosurgical and pharmacologic approach to managing the spasticity associated with CP involves the implantation of a pump to infuse baclofen directly into the intrathecal space surrounding the spinal cord to provide relief of spasticity. Intrathecal baclofen therapy is best suited for children with severe spasticity that interferes with activities of daily living (ADLs) and ambulation. High doses of oral baclofen are associated with significant side effects, including drowsiness and confusion, yet are often unable to provide adequate relief of spasticity. Direct infusion of baclofen into the intrathecal space provides relief without as many side effects ([Motta, Antonello, and Stignani, 2011](#)). Intrathecal baclofen is especially helpful in improving comfort ([Morton, Gray, and Vloeberghs, 2011](#)). Oral tizanidine given in conjunction with botulinum type A has been reported to be more effective than oral baclofen and botulinum type A in one study of children with CP ([Dai, Wasay, and Awan, 2008](#)).

Patients may be screened before pump placement by the infusion of a “test dose” of intrathecal baclofen delivered via a lumbar puncture. Close monitoring for side effects (hypotonia, somnolence, seizures, nausea, vomiting, headache) is necessary. Relief of spasticity occurs for several hours after the infusion. If a favorable response is noted, the patient is considered a candidate for pump placement. The implantation procedure is done in the operating room by a neurosurgeon. The pump, which is approximately the size of a hockey puck, is placed in the subcutaneous space of the midabdomen. An intrathecal catheter is tunneled from the lumbar area to the abdomen and connected to the pump. The pump is filled with baclofen and programmed to provide a set dose using a telemetry wand and a computer. Benefits of intrathecal baclofen include fewer systemic side effects than oral baclofen, dosage titration for maximizing effects, and reversibility of therapy with removal of the pump if so desired. The patient may remain hospitalized for 3 to 7 days to adjust the dosage and ensure proper