

## What is it?

A baclofen pump is a surgically implanted medical device used to reduce spasticity. Spasticity is the uncontrolled tightening of muscles or contractures and is characterized by hypertonicity, hyperreflexia, clonus, weakness, and discoordination. When muscles are tight and stiff, function is impeded and movement is difficult. Children with baclofen pumps may be diagnosed cerebral palsy, spinal cord injury, brain injury, or stroke. Instead of taking baclofen medication every day by mouth, a baclofen pump infuses baclofen directly into the intrathecal space. This form of treatment delivers the medication to directly where its needed, using a much smaller dose, and without the side effects when compared to the large oral doses. Since intrathecal baclofen medication acts on the central nervous system, side effects can include upset stomach, constipation, urinary retention, loose muscles, sleepiness, dizziness and headaches.

The device includes a pump about the size a hockey puck implanted under the skin (usually in the lower abdomen) and a catheter that is connected to the pump and runs under the skin to the spinal canal where the tip is placed in the intrathecal space. Liquid baclofen is instilled in a reservoir inside the pump. Medication is refilled in the healthcare provider's office using a needle. Inserted through the skin and into the refillable pump port. Depending on the specific medication dose and delivery rate for the child, most medications will last 2-3 months before requiring a refill. The device is operated by a lithium battery and will last approximately 4-7 years before it requires replacement.

The implanted pump has specific alarms that will sound if the device has a problem, needs to be replaced, or requires a medication refill. The tone of the alarm varies based on the urgency of the problem.

## What are the problems?

Since intrathecal baclofen medication acts on the central nervous system, side effects can include upset stomach, constipation, urinary retention, loose muscles, sleepiness, dizziness and headaches. Adverse events like baclofen overdose or under-dose can result from mechanical problems like internal component failure, pump migration or flipping, or programming error. Other rare but serious complications include catheter placement due to the catheter becoming bent, kinked, occluded or migrated from its original placement.

Complication	Cause	Symptoms
Baclofen withdrawal	Occurs when the dose of baclofen is suddenly decreased or stopped. May be the result of empty medication reservoir, programming error, problem with catheter or battery.	Symptoms include increase in spasticity, sweating, itching, fever, increased heart rate, increased respiratory rate, increase in blood pressure, or altered mental state including confusion or irritability. Symptoms can progress to hallucination, seizure, coma, or death. Baclofen withdrawal is considered a medical emergency.
Baclofen overdose	Can occur due to human or device error, or unsafe combinations of intrathecal and oral medication. Occurs less commonly than withdrawal.	Mild symptoms include lightheaded, low muscle tone, sleepiness, and difficulty concentrating. Symptoms can progress to slowed heart rate, respiratory depression, difficulty awakening, seizure, coma or death.  Symptoms may appear gradually or suddenly.

After 3 months, an individual becomes dependent on the baclofen. Some healthcare providers will prescribe oral medication as a precaution to treat baclofen withdrawal in the event that ITB therapy is not working. This is considered an emergency and therapy will need to be restored as soon as possible.

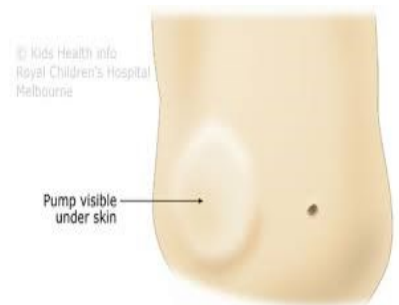
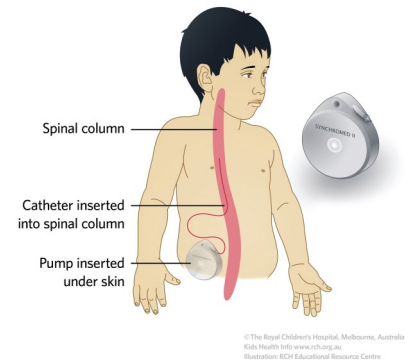


Photo source: Royal Children's Hospital  
Melbourne, Dept of Developmental Medicine

**SHNIC school nurses information:**

**Specific health issues for individual health care plans**

- Diagnosis and need for baclofen pump
- Location of pump, date of surgical placement
- Last refill date and/or predicted refill schedule
- Current medication list
- Child specific signs and symptoms of baclofen overdose and under-dose
- Skin assessment, location of palpable pump, incisions
- Activity and/or positioning restrictions
- Fever protocol for implanted medical device
- Emergency action plan
- Medical device information card and/or emergency card, bracelet
- PRN emergency medications that could include oral baclofen, oral diazepam, rectal diazepam

**Helpful hidden device information for school nurse**

Type of device: \_\_\_\_\_

Serial #: \_\_\_\_\_

Model #: \_\_\_\_\_

Implant date: \_\_\_\_\_

*For school health professional working with student*

Experience with device:  Y  N

Device manual at school:  Y  N

DME contact information:  Y  N

*Device specific*

Alarms:  Y  N

Battery:  Y  N

Back up equipment at school:  Y  N

*Precautions to consider at school*

Positioning of student:  Y  N

Emergency plan in place:  Y  N

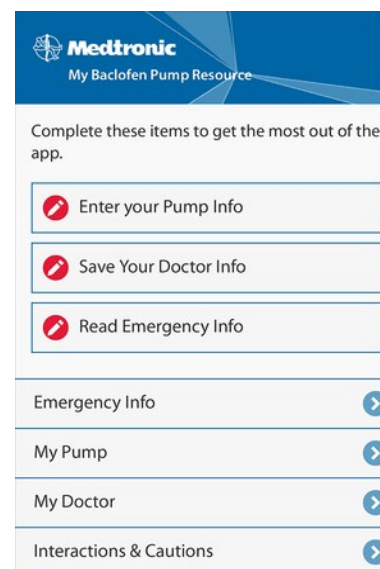
Physical activity restriction:  Y  N

Magnet sensitivity:  Y  N

Emergency outlet:  Y  N



Medtronic medical device identification card



Medtronic Pump Partner App

**Resources**

**Medtronic– About ITB Therapy**

<http://www.medtronic.com/patients/severe-spasticity/therapy/>

**Baclofen pump therapy for the treatment of spasticity: A guide for patients and families**

<http://www.med.umich.edu/1libr/PMR/BaclofenPumpTherapy.pdf>