

## Schwab Rehabilitation Hospital

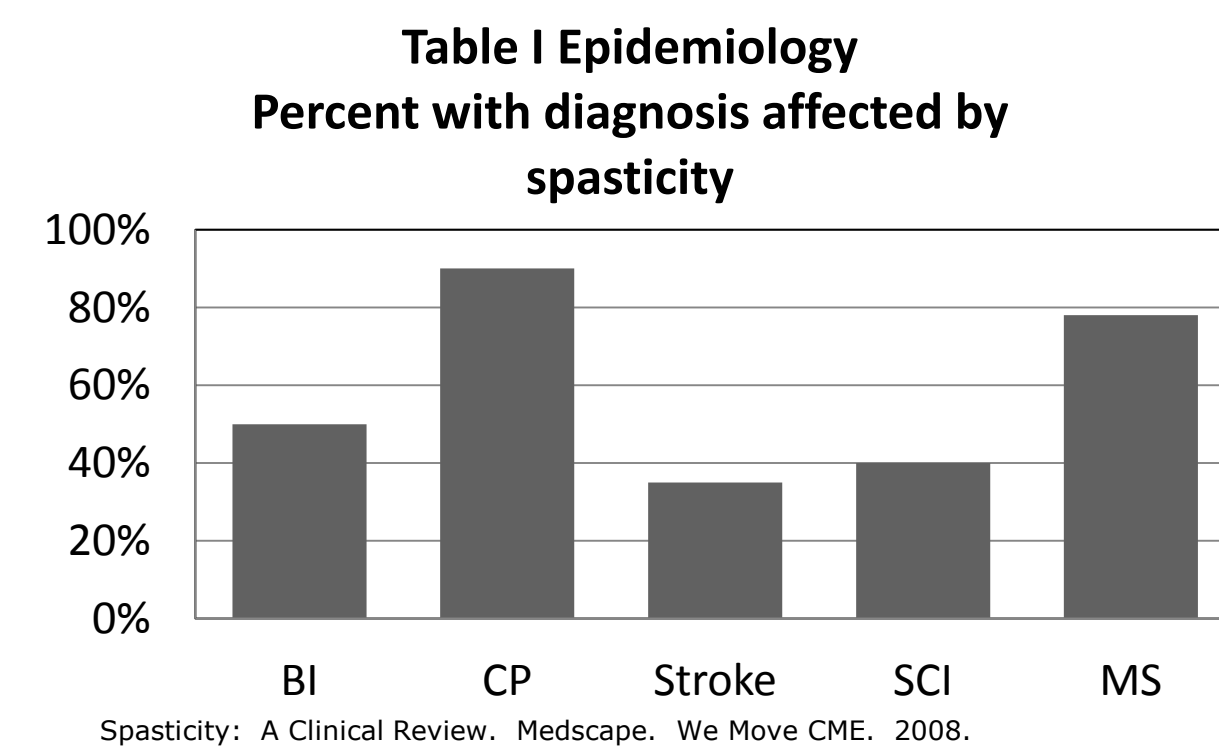
Schwab is a free standing inpatient rehabilitation facility (IRF) on the west side of Chicago, a member of a public hospital system, serving patient populations including: stroke, amputation, spinal cord injury, traumatic brain injury and pediatrics. In 2012, our patient population was 76% African American/Black, 11% Hispanic/Latino, & 11% White.

### Introduction

Spasticity affects many patients throughout the rehabilitation continuum of care. In the outpatient setting, nurses are actively involved in the management of patients with spasticity, helping them to live more functional lives.

Spasticity is associated with central nervous system (CNS) injury. Injury to the CNS results in loss of descending inhibitory control. The clinical manifestation of this is spasticity, one component of the upper neuron syndrome. Spasticity commonly affects patients with:

- Brain injury
- Cerebral Palsy
- Stroke
- Spinal Cord Injury
- Multiple Sclerosis

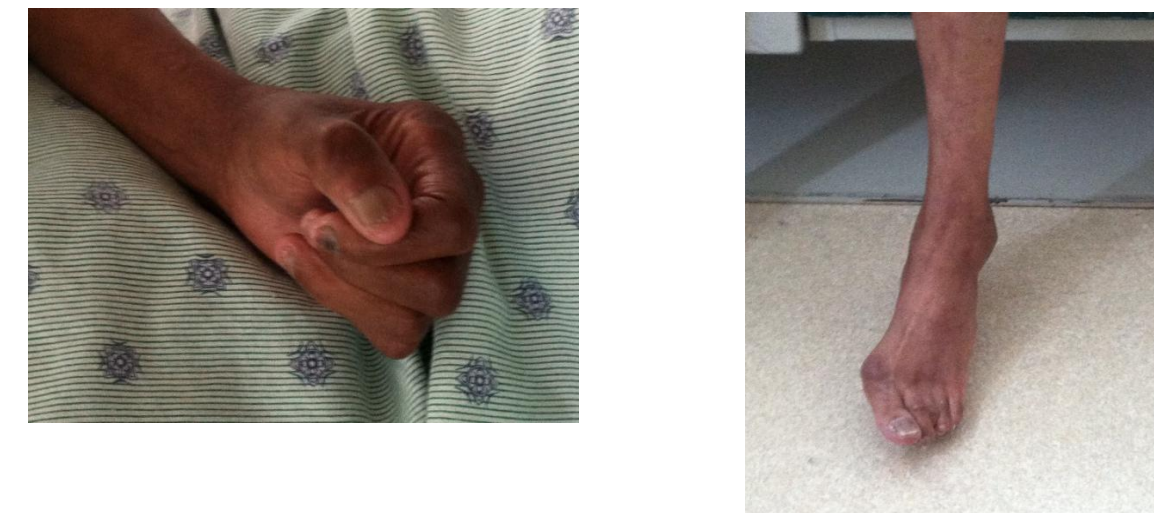


Spasticity treatment is tailored to the patient's individual goals.

| Table II - Goals for Spasticity Treatments |  |
|--|--|
| Reduce spasms                              | Improve hygiene                        |
| Decrease pain                              | Improve dressing                       |
| Prevent contractures                       | Improve mobility                       |
| Prevent pressure sores                     | Ease positioning                       |
| Decrease caregiver burden                  | Improve fit and compliance with braces |
| Improve range of motion                    | Improve sleep                          |
| Improve transfers                          | Improve ambulation                     |

- Often physicians begin by prescribing oral medications.
- These medications may have limited effects with short duration and systemic side effects such as weakness and sedation.
- Oral medications also have limited efficacy for cerebral origin spasticity.
- Treatments such as range of motion, stretching and exercise help to reduce spasticity and prevent contractures. Splinting, casting and bracing are used to maintain range of motion.
- Surgery can play an important role in spasticity management for some patients.
- Patients are referred to surgeons for surgical methods to treat spasticity, such as tendon lengthening and rhizotomy.

- Physicians inject botulinum toxin into spastic or dystonic muscles to reduce spasticity.
- Phenol is injected by physicians as a nerve block or motor point block to reduce spasticity.
- Intrathecal baclofen therapy minimizes the amount of drug needed to be effective and limits the side effects associated with taking oral medications for spasticity.



### Phenol injection

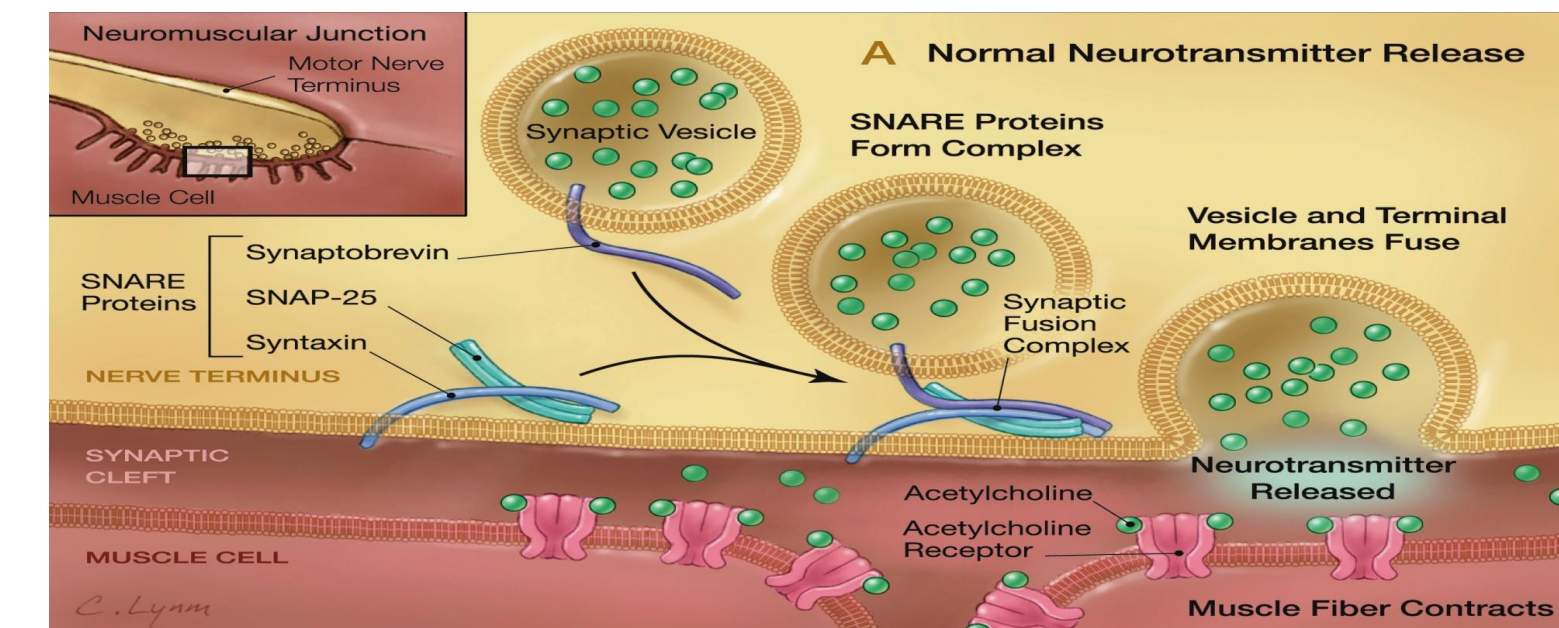
- Physicians inject phenol to the nerve/motor point under stimulator guidance.
- Phenol is typically injected into large muscle groups and may be used to treat clonus.
- Phenol when injected onto the motor nerve promotes chemical neurolysis.
- Onset is several days and the duration is weeks to months.
- Phenol is an inexpensive alternative to botulinum toxin injection.

- Possible side effects:
  - \*pain
  - \*infection
  - \*bleeding
  - \* deep vein thrombosis
  - \* dysesthetic pain
  - \* compartment syndrome

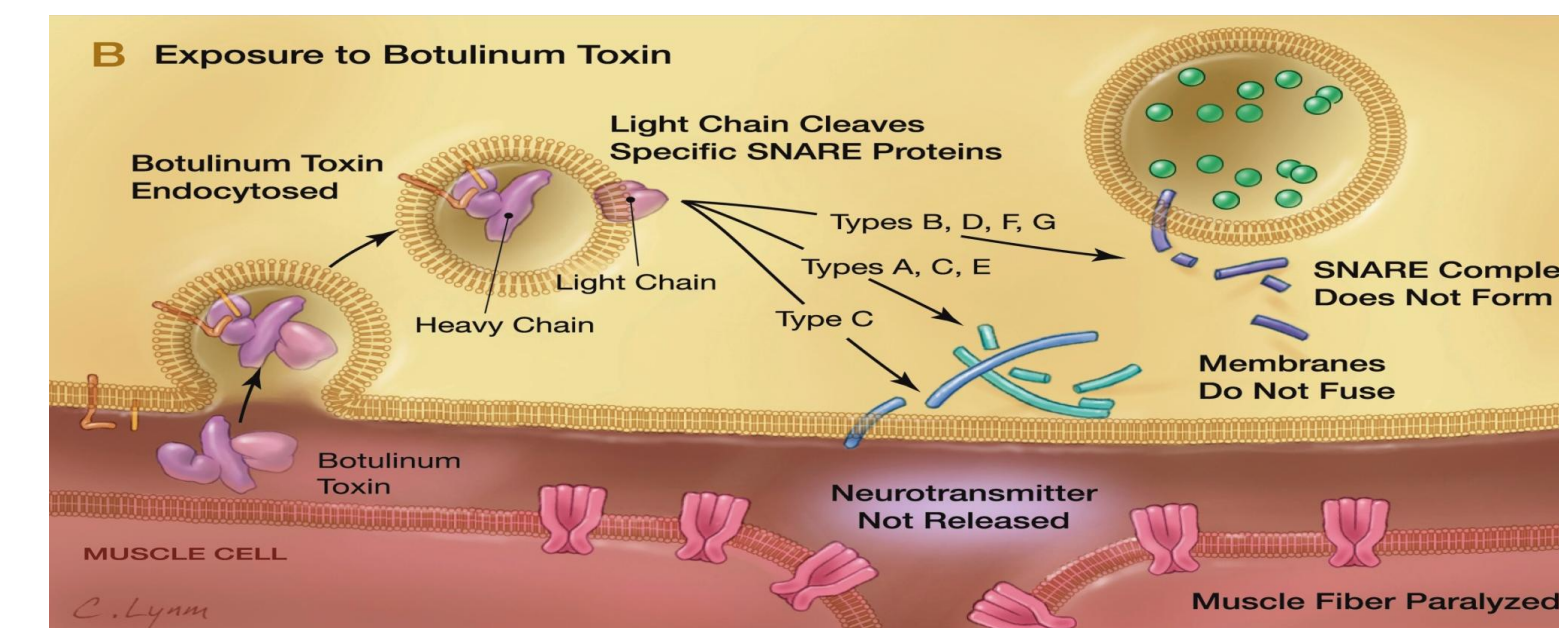
The nurse assists physicians by setting up the equipment, preparing the medication and helping to position patients during procedures. The nurse also answers questions that the patient may have before and after the procedure.

### Botulinum toxin injection

- Botulinum toxin is ideal for the management of focal spasticity.
- Botulinum toxin blocks neuromuscular transmission by inhibiting acetylcholine release.
- Botulinum toxin is mixed with normal saline and is injected intramuscularly into select muscles. Dosing is determined according to body weight. In the Schwab clinic the doses range from 100 units to 900 units per patient.
- The most common diagnoses for patients treated with botulinum toxin injections in the Schwab clinic are stroke, brain injury, spinal cord injury and cerebral palsy.



Arnon et al. JAMA 2001;285(8):1059-1070.



Arnon et al. JAMA 2001;285(8):1059-1070.

- Onset is typically approximately 2 to 10 days and the injections usually have a lasting effect for up to 3 months at which time patients return for injections.

- Possible side effects:
  - \*Pain
  - \*Infection
  - \*Bleeding
  - \*Pneumothorax
  - \*Allergy
  - \*Muscle weakness
  - \*Dysphagia
  - \*Breathing difficulties
  - \*Antibody formation
  - \*Botulism-like syndrome

The nurse assists physicians with botulinum toxin injections by mixing the medication, preparing equipment and positioning patients during procedures. The nurse works with therapists in the clinic and it is a multidisciplinary approach. The nurse is also involved with scheduling. Nurses answer questions the patient may have before and after the procedure.

### Intrathecal baclofen therapy



Medtronic



Medtronic



Medtronic

- Nurses take an even more active role in intrathecal baclofen therapy (ITB). ITB is used to treat spasticity caused by damage to the brain or spinal cord to provide an overall reduction in muscle tone.

- The Medtronic Syncromed pump is a programmable, battery powered device that delivers intrathecal baclofen. It is surgically placed in the abdomen. A thin silicone catheter is inserted into the intrathecal space to a predetermined location and connected to the pump.

- The patients with baclofen pumps seen in the Schwab clinic have diagnoses such as spinal cord injury, brain injury, multiple sclerosis and cerebral palsy.

- Registered nurses in the clinic refill baclofen pumps every one to six months. Nurses teach patients and families the signs of symptoms of underdose, symptoms of overdose and possible complications.

- Nurses communicate with physicians regarding any possible complications with the pump and communicate patient's compliance with the refill schedule.

- The battery life of the baclofen pump is approximately seven years. The clinic nurse works with the surgeon's office to ensure that the pumps are replaced within the necessary time frame.

- Possible side effects:
 

|                         |                         |
|-------------------------|-------------------------|
| Underdose               | Overdose                |
| *Increase in spasticity | *Drowsiness             |
| *Itching                | *Lightheadedness        |
| *Hallucinations         | *Hypotonia              |
| *Seizure                | *Weakness               |
|                         | *Respiratory depression |
|                         | *Coma                   |

Baclofen pump therapy may lessen the care needed from caregivers and may improve patient function. The baclofen pump improves lower extremity spasticity and may improve upper extremity spasticity based on the placement of the catheter.



### Conclusion

While spasticity cannot be cured, there are a number of ways to treat it. The main goals of spasticity management are to relieve symptoms, increase function, increase patient independence and decrease caregiver burden. Nurses take an active role in the Schwab clinic to help patients with spasticity by helping with treatments and being involved in spasticity management.

### Acknowledgements

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Devra Sheldon, PT, MSPT, NCS, Schwab Rehabilitation Hospital

### References

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