

# SPINAL CORD MEDICINE

## HANDBOOK FOR PATIENT AND FAMILY



## EQUIPMENT



**Frazier Rehab Institute**

A service of Jewish Hospital & St. Mary's HealthCare

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## **THE PATIENT AND FAMILY HANDBOOK**

This Handbook is designed to give you the information to better understand spinal cord injury and the tools needed to manage your health care needs successfully. Information is intended for you and your family because, those who love you, will often be involved in assisting you with your care needs while in the hospital, and in the home environment. As you read through the Handbook, your rehab team at Frazier is available to address your questions and provide you more information pertinent to your needs.

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## **A BRIEF NOTE ABOUT THE FOUNDER OF FRAZIER REHAB INSTITUTE**

In her early 20's, Amelia Brown of Louisville sustained a spinal injury in a car accident in the 1940's. With no rehabilitation services in Louisville, she traveled to New York for treatment. After returning to Louisville, she married a physician, Dr. Harry Frazier. Believing Louisville needed its own rehabilitation facility, Mrs. Frazier founded the Frazier Institute of Physical Medicine and Rehabilitation in the early 1950s. Her son, Owsley Brown Frazier, served as Chairman of the Fund Raising Committee for Frazier's new building, named the Frazier Rehab and Neuroscience Center, which opened in 2006.

## **DISCLAIMER**

The information contained herein is intended to be used in accordance with the treatment plan prescribed by your physician and with the prior approval of your physician. You should not begin using any of the methods described in this publication until you have consulted your physician. Jewish Hospital & St. Mary's HealthCare, Inc. D.B.A. Frazier Rehab Institute, its affiliates, associates, successors and assigns, as well as its trustees, officers, directors, agents and employees are not liable for any damages resulting from the use of this publication.

NOTE: Words *italicized* in the text below are defined in the Glossary at the end of this Chapter.

## EQUIPMENT

### WHEELCHAIRS AND CUSHIONS

- Most patients will need a wheelchair and cushion after rehab.
- There are many different types of wheelchairs and cushions.
- It is very important to get a chair that best fits your needs and lifestyle.
- Cushions are not a substitute for performing regular pressure relief.
- A therapist trained in seating and positioning will help you decide which chair and cushion are right for you.

Most patients with spinal cord impairments leave rehabilitation needing a wheelchair and cushion. For some, the use of the wheelchair is short term. For others, the wheelchair may be needed throughout life. Regardless, it is very important to get a wheelchair that is appropriate for your size, level of function, needs and lifestyle.

At Frazier you will have the opportunity to try various chairs, cushions, seating, and positioning options. Trying out different equipment will help you understand what you do and do not like, and what works best for you and your lifestyle. You will work with a therapist trained in seating and positioning to determine which chair is best for you.

When deciding what wheelchair is best for you, it is important to consider the following:

- Will you be using the chair mostly indoors or outdoors, on level ground, on uneven surfaces, for work, for play or for athletic competition?
- How much time will you spend in the chair each day?
- How will you transfer in and out of the chair?
- Will you be independent using the wheelchair?
- How big are the doors and hallways at home, work or school?
- Can you transport the chair in your vehicle?
- Do you expect any growth spurts or changes in your body size?
- Do you feel comfortable with a chair that can be adjustable?
- How long will you need the chair?

Most patients will leave rehabilitation with a *rental* or *loaner* wheelchair until a customized chair is approved by insurance and ordered through a vendor. Because wheelchairs get old and breakdown, you may need to be evaluated for a new chair about every five years or in the event that your body shape and size changes making your chair not fit properly. You can

return to Frazier's Seating and Positioning Clinic to learn about new equipment options and technologies.

It is recommended that you not order equipment off the Internet or purchase equipment at a retail store unless you have discussed the specific equipment with your therapist and/or doctor. Choosing the wrong equipment, though economical, may cause serious injury to your body.

## MANUAL WHEELCHAIRS

*Manual wheelchairs* can provide independence in the home and community for someone who is strong enough to propel the chair. These wheelchairs are generally lightweight and can be broken down to fit inside a vehicle or into the trunk. Manual wheelchairs consist of a number of different components. Many components will be described, and advantages and disadvantages of each will be provided.

**Folding Frame.** The *frame* is the main part of the chair to which all other parts are attached. The folding frame folds in the middle so it fits more easily in the vehicle. It is slightly heavier than a rigid frame and you do lose some energy when pushing the wheelchair because the chair has more movable parts. The moveable parts do allow the chair to flex more when riding over rough surfaces which does provides some shock absorption. The more active user is likely to damage a number of moving parts on this frame.

**Rigid Frame.** This type of frame is stronger, lighter and has less moving parts which means there is less chance for breakdowns. It does not fold in the middle, instead, the back can fold down and you can take the rear wheels off. This type of chair requires more storage space in the vehicle but it is lighter weight and easier for some people to manage on their own. This frame is more durable than a folding frame chair, and you lose less energy pushing the chair due to its rigid nature.

**Rear Wheels.** These are the large wheels on the back of the chair used to push the chair. These wheels are easily removed with the push of a button. Some chairs allow the angle or *camber* on the rear wheels to be adjusted. You can get either mag wheels made of a durable plastic or spokes made of metal. Mag wheels are heavier than spoke wheels but are more durable and more difficult to knock out of alignment. Spokes are much lighter but require more maintenance as they can break and become loosened over time.

**Tires.** There are a variety of tire selections for a wheelchair. Solid tires are made of hard rubber and are much heavier than the other types of tires. They are the longest lasting and require the least amount of maintenance. They provide a rougher ride and have poor traction outdoors. Pneumatic, similar to bicycle tires, are filled with air. They provide the smoothest ride and best traction of any of the tires. The air pressure can be adjusted depending on the surfaces you will drive over. The main disadvantage to a pneumatic tire is the tire can go flat. It can, however, be easily fixed by placing a new inner tube in the tire as you would a bicycle tire. Stiffer inner tubes, called flat free inserts, are available for tires. A foam insert is placed inside the rubber tire that prevents flat tires. They are lighter weight than a solid rubber tire but provide a less smooth ride than a pneumatic tire.

**Camber.** Slanting of the top of the tire in toward the chair is called *camber*. It can be created by placing washers between the frame and the axle plate or by using an angled axle tube. Camber provides improved turning and lateral stability of the chair and improves efficiency of each stroke to the wheels. One disadvantage is that it increases the overall width of the chair which makes maneuvering through smaller spaces more difficult. Camber is most frequently used on adaptive sports chairs.

**Handrims.** *Handrims* are placed on the outside surface of the wheels and provide a surface on which to push or move the chair. Plastic coated handrims provide better contact between the hand and the rim. They are used for a person who has a weaker grip. While they do increase contact, they create more friction and can get hot when trying to slow the chair down especially going down a ramp. Metal handrims are best suited for someone with normal hand function. They do not give as strong of a contact between the hand and rim but do not get hot when slowing the chair down. Projection handrims have knobs or pegs sticking up from the rim. Someone who is unable to grip the rim can brace his or her wrist or palm on the projections to push the chair. Projections may add to the width of the chair which makes it more difficult to maneuver in smaller spaces.

**Brakes.** These are used to lock the chair into place for *transfers, pressure relief* and travel in vehicles. Push-to-lock brakes lock by pushing down on the lever and unlock by pulling up on the lever. Pull-to-lock brakes lock by pulling and unlock by pushing forward. One disadvantage of pull-to-lock brakes is they are often in the way for someone performing lateral or sliding board transfers. Both types of locks can get in the way during wheelchair propulsion. Scissor-lock-brakes are under the seat of the chair when unlocked making them less obtrusive during propulsion. They lock by pulling them in front of the wheel. Brake extensions are added levers that make the brakes easier to reach and push. These are often used for someone with decreased hand function or decreased balance. They are often removable to get them out of the way for lateral or sliding board transfers.

**Front Casters.** *Castors* are the small wheels in the front of the wheelchair that are usually attached to the frame by a fork. Smaller casters make the chair more maneuverable but make travel over uneven surfaces more difficult. Larger wheels are better for travel over uneven ground outdoors, but increase the turning radius of the chair making the chair more difficult to use in small spaces. Large front casters can also interfere with a person's feet or heels.

**Back Rest.** This is the back part of the wheelchair that will determine your positioning and posture while sitting in the wheelchair. There are a number of different back options for the chair depending on your needs. The most standard back is upholstered and comes up to the middle of your back. Some can be adjusted by straps in the back of the chair to tighten in places needing more support and loosened in places needing less. As your balance improves and you become more comfortable in the wheelchair, you may choose to get a lower back to decrease chair weight and have more room for your arms to propel the chair more efficiently. Backs can be molded for patients who have specific needs.

**Arm Rests.** These are placed on the chair to provide a place for you to position your arms. Armrests can be either fixed or removable. Fixed armrests should only be used for someone

who is able to stand from the chair. Removable armrests are necessary for anyone who performs lateral or sliding board transfers out of the chair. Removable armrests may flip back, swing away or lift off the chair. Height adjustable armrests are also available. These allow you to move the arm rests up or down to better support your arms or to allow you to better fit under tables and desks. Two lengths of armrests are available. Desk length armrests are shorter and allow the user to get closer to tables and desks whereas full-length armrests provide a longer surface for supporting the arms or a lap tray.

**Leg Rests.** These are placed on the chair to provide positioning for your legs. Good positioning of the legs helps with balance and posture in the wheelchair. You can get fixed or swing away leg rests. Fixed leg rests cannot be removed from the chair. They make the chair smaller and more maneuverable but standing from the chair or positioning your feet on the ground for transfers is more difficult. Swing away leg rests move away from the chair and allow you to place your feet on the ground for transfers or standing. Swing away leg rests can also be ordered as elevating leg rests to help with leg positioning, swelling reduction and spasm control. Elevating leg rests increase the turning radius of the chair and will make maneuvering in tight spaces more difficult.

**Grade Aids.** *Grade aids* are mounted along with the brakes on the wheelchair. They allow the wheels to roll forward but prevent them from rolling backward when going uphill. Those who are more adept at wheelchair mobility often get their fingers caught in the grade aids. This feature cannot be used with scissor lock brakes.

**Anti-Tippers.** *Anti-tippers* are placed on the back of the wheelchair to prevent the chair from tipping backward during transfers, pressure relief and propulsion over uneven surfaces. They are usually removed once a person becomes more adept at using the wheelchair. They must be removed to perform wheelies or to go up a curb.

**Clothes Guards.** *Clothes guards* are placed between you and wheel to protect your clothing and prevent clothes from becoming caught in the wheels during propulsion. They can be cloth or removable plastic to make transfers easier.

**Spoke Guards.** *A spoke guard* is a plastic piece placed over spoke wheels to protect the spokes and to prevent fingers from becoming caught during propulsion.

**Push Handles.** These are placed on the back of the wheelchair so a caregiver can push the wheelchair if needed. Some people hook onto these handles to perform pressure relief or reach down to the floor. The handles can either be fixed or can flip down out of the way when not in use.

**Seatbelt.** This feature can be used to improve posture and positioning in the wheelchair. It can also be used to prevent falling out of the chair during pressure relief and propulsion over uneven surfaces. Persons who are more comfortable with wheelchair use often do not use a seatbelt.

**Chest Strap.** *A chest strap* is a strap attached to the back of the chair that fastens across your chest. It is used to keep someone with poor trunk control upright in the chair.

**Lateral Supports.** *Lateral supports* are pieces generally placed on the outer edges of the wheelchair back. They are used to keep someone with poor trunk control upright in the chair. They can be fixed or removable. Removable lateral supports are generally better for performing lateral or sliding board transfers in and out of the wheelchair.

**Abduction and Adduction Wedges.** *Abduction and adduction wedges* are used to maintain the legs in a neutral position. They can prevent the knees from turning toward one another or too far away from one another.

## POWER WHEELCHAIRS

A *power wheelchair* is a battery-powered wheelchair that can increase independence in the home and community for someone who is unable to propel a manual wheelchair. Because power chairs can cost \$5,000 to \$15,000 or more, insurance companies typically pay for them only when there is a medical necessity. Thus, most insurance companies require a Letter of Medical Necessity or Justification be written by your therapist. Power chairs though can be purchased privately but should not be done unless you have discussed the specific equipment with your therapist and/or doctor. Choosing the wrong equipment, though economical and convenient, may cause serious injury to your body.

Power chairs may weigh over 200 pounds and cannot be broken down into small pieces to fit into a car so consideration needs to be given to how the power can be transported from one location to another. Most people will use their privately owned van with a lift or public transportation, i.e., a bus or van with a lift. Many people also purchase a manual wheelchair in addition to their power chair in case the chair breaks down and requires repair.

The most commonly used power chair is a direct drive or power base chair. Here, the motor directly turns the wheels and the seat is mounted on a base instead of the frame of the wheelchair.

A power wheelchair has of a number of different components. Described below are many components and their the advantages and disadvantages.

**Rear Wheel Drive Power Chair.** This type of drive is an older style power chair that is not commonly used. The wheels on this chair are belt driven and are not direct drive. This type of chair has a very large turning radius.

**Mid Wheel Drive Power Chair.** This is the most commonly used drive type for power chairs. It has a very small turning radius which makes it easier to use in the home though it can be more difficult to learn to drive. The mid-wheel drive can also feel tippy when stopping. It can also become stuck in ditches or valleys during use over uneven terrain.

**Front Wheel Drive Power Chair.** This type of drive is an older style that is not commonly used. It is much heavier on the front end of the chair and has a very large turning radius. It is used primarily in power chairs that transition to *standing frames*.

**Tilt in Space.** This is a seating option that allows someone to stay in a seated position while the chair is tilting backward. In the tilted position, weight is transferred from the buttock to the back to provide pressure relief. This is important for persons in power chairs who are unable to perform other types of *pressure relief*. This option can also be used for persons who are unable to tolerate sitting up straight.

**Head Rest.** This piece is mounted on the back of the wheelchair to provide support for the head. It is used on tilt in space chairs to support the head when tilted backward. This is an important feature for someone with decreased head control.

**Ventilator Tray.** This can be added to the chair to transport a ventilator on the wheelchair.

**Joystick Drive.** This is one method for driving the chair. A joystick, similar to one on a video game, is moved with the hand to change the direction the chair is moving. Someone with good hand control or *tenodesis* generally uses this drive option. The joystick can be mounted on either side of the chair depending on the person's needs.

**Goalpost Drive.** This is a modified joystick used for someone who has more elbow and shoulder function than wrist and hand function. A splint is often used to keep the wrist supported while the hand is placed on the goalpost and it is moved with shoulder or elbow movements. It can also be mounted on either side of the chair depending on the person's needs.

**Head Controls.** This is another method for driving the chair. A switch is located in the headrest of the chair and movements of the head move the chair. This is used for someone with good head control but limited arm function.

**Sip and Puff Control.** This is a sophisticated method for driving the chair. Someone who is unable to use other drive methods uses this method. A straw located near the person's mouth is connected to an electronic module. The person gives a series of hard or soft sips or puffs on the straw to start, stop, turn or recline the wheelchair.

**Chin Control.** This is a method of driving the chair in which a smaller joystick is located next to the chin. Movements of the chin move the chair. This is used by someone with limited arm function but good head control.

Advanced technology now allows some wheelchair electronic systems to interface with *environmental control systems*. These systems can be installed in your home or work environment to allow you to turn on lights, dial a phone, access the internet or control other electronic devices from your wheelchair.

## **POWER ASSIST WHEELCHAIRS**

A *power assist wheelchair* is a fairly new type of wheelchair that is a hybrid of a manual and a power chair. This chair is generally used by someone who is not strong enough to propel a *manual chair* but wants to be more active than a *power chair* allows him or her to be. This chair is constructed using a manual wheelchair frame with the most appropriate back and seating

options. The wheels have a battery-powered motor in them. As the wheels are manually pushed, the motor is activated and provides an extra push. The driver is able to go further with one push and fatigues less quickly. The motors make the wheels heavy and more difficult to transport. They require regular charging, and like any battery, can lose power if not cared for properly. It is very important for the user to have a set of standard wheels to use in case the battery-powered motor wheels break or need repair.

## WHEELCHAIR CUSHIONS

There are many types of wheelchair cushions available. Cushions are used to:

- Provide a comfortable surface on which to sit
- Increase the distance between the floor and your buttocks (this gives your legs more room, which is even more important if you are very tall)
- Improve your sitting balance and posture
- Provide some *pressure relief* (The cushion is not a substitute for performing pressure relief)
- Distribute your weight more appropriately between your buttocks and thighs

There are a number of things to think about before deciding which cushion is right for you. Your therapist will discuss different cushion options with you to determine the most appropriate choice. Your therapist will also discuss how you can best care for your cushion.

General care tips are as follows:

- If you are using an air cushion, you should check the air each day. Be careful not to air it up too much or you will be sitting on a hard surface and will not get pressure relief as you should. If the cushion is not aired up enough, your buttocks will sink down and rest on the hard seat of the wheelchair.
- If you are using a gel cushion, be sure to knead it each day to move the gel back under your buttocks. If you allow the gel to stay out to the side, you will not get the pressure relief as you should. Also, do not leave your gel cushion out in the cold as it may freeze.
- Never dry your cushion cover in the dryer. Always let it air dry. You may want to purchase a second cushion cover to have while you are cleaning your other cover.

## SEATING AND POSITIONING CLINIC

At Frazier's Seating and Positioning Clinic, you can try out new chairs, seating and positioning options. A physical therapist specially trained in seating and positioning will perform an evaluation and discuss various seating and positioning options with you and your caregivers. The therapist works very closely with your therapy team and a number of equipment vendors to provide each patient with the most appropriate equipment and service. If you are in need of a wheelchair and/or seating and positioning equipment, you can be evaluated at Frazier's Seating and Positioning Clinic.

## SPLINTING

When muscle function is lost or impaired, changes occur that may damage muscles, joint structures and soft tissues. These changes can result in muscle overstretching, muscles getting stuck in one position, joint stiffness, joint misalignment, soft tissue tightening and joint instability. These changes can be prevented with *range of motion exercises*, positioning, casting and splinting or bracing. Various types of splints and braces for the upper and lower limbs are used.

Splints and braces can serve the following purposes:

- Protect a weak body part such as the hand or arm from damage.
- Support and keep a body part from moving while healing.
- Maintain normal alignment of the body part to reduce stiffness and prevent the part from getting stuck.
- Provide support to weak muscles to increase function.
- Provide comfort and reduce pain.
- Correct or reduce any misalignment or deformity of joints and muscle weakness.

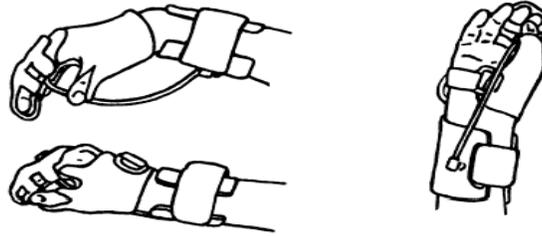
Your occupational or physical therapist as well as the physician will recommend, prescribe and provide the appropriate splints based on the your needs. The therapist will also provide education regarding the reasons for the use of the splint, how to use and care for the splint, as well as any precautions for using the splint. The following splints are most commonly used for individuals with spinal cord injury.

### UPPER EXTREMITY SPLINTS

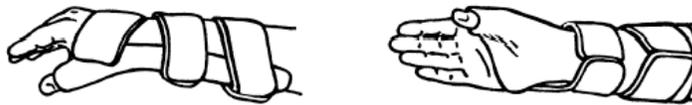
- **Resting Hand Splint (RHS).** The *resting hand splint* is a splint that keeps the hand in a position that supports the wrist and hand to reduce the risk of joints getting stuck in one position. It is commonly used in the beginning phases of rehab to protect weak or immobile hands.
- **Dorsal Wrist Splint (ADL Splint).** The *dorsal wrist splint* allows the wrist to be supported for better hand function. It has a cuff part that can be used to hold a spoon or fork to increase the use of the hand in self-care activities.
- **Tenodesis Splint.** The *tenodesis splint* allows proper positioning of the fingers and thumb when the wrist is bent back to allow one to grasp and release objects.
- **Wrist Cock up Splint.** The *wrist cock up splint* supports the wrist in a bent back position for better hand use.
- **Long Opponens Splint.** The *long opponens splint* has a thumb component to position the thumb in order to improve grasp and release during self-care activities.
- **Short Opponens Splint.** The *short opponens splint* allows tenodesis use of the hand in individuals with the ability to use their wrists.

# SPLINTS

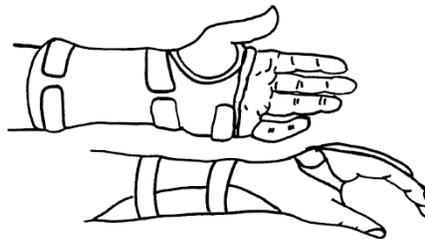
## TENODESIS SPLINT



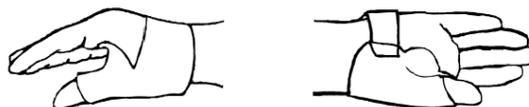
## LONG OPPONENS SPLINT



## WRIST COCK UP SPLINT



## SHORT OPPONENS SPLINT



- **Universal Cuff.** The *universal cuff* (U-cuff) is a hand-based splint that holds ADL items for self care tasks. It is commonly used by individuals who do not have hand function but do have wrist control.
- **MP Block Splint.** The *MP block splint* supports the joints of the fingers to prevent clawing of the hand and promote normal grasp and release movement during functional tasks.
- **Elbow Extension Splint.** The *elbow extension splint or cast* can be used to reduce tightness to allow normal elbow range of motion.
- **Overhead Suspension Slings.** *Overhead suspension slings* can be used to support weak muscles against the force of gravity while allowing the individual to use the hand for functional tasks such as feeding and computer tasks. Moveable rods can allow the individual to adjust the height for different tasks.
- **Shoulder Support Slings.** Various shoulder slings such as the *shoulder saddle* or GivMohr sling can be used to support a weak or painful shoulder and arm, especially for individuals who are working in a standing position in which the arm would dangle without a sling's support.

## LOWER EXTREMITY BRACES

Bracing can also be used on the legs to improve function especially in a standing position. The most common brace used for the leg is the *ankle foot orthosis* (AFO). This brace is placed into the shoe and comes up the back of the lower leg and straps around the calf. It is used to help keep the foot from resting in a dropped down position and to help prevent the toes from dragging during walking. It is usually used for someone with no control or very weak control of the ankle. This brace is made of plastic and can either be prefabricated or custom molded to an individual's foot. Solid AFO's allow very little movement at the ankle. Articulated AFO's have hinges at the ankle joint and allow some movement at the ankle joint. This type of AFO can be adjusted and changed frequently depending on the person's needs. Articulated AFO's are often made of a combination of plastic and metal pieces.

There are a number of other bracing options for individuals who are learning to walk. Unfortunately these braces are often heavy, difficult to use and require a lot of energy. They are most frequently used in the outpatient therapy setting. Your physical therapist can discuss bracing options with you when appropriate.

## SKIN INSPECTION WITH BRACING

When wearing a brace, it is very important to perform *skin inspection* frequently to check your skin for areas of irritation or breakdown. Often the plastic or straps on the brace can rub the skin especially over bony areas. When you begin wearing a new brace, you should wear it for 10-15 minutes at a time for the first few days and increase wearing time from there. You should check for red marks on the skin after you take off the brace. Any areas of redness should go away after 30 minutes of having the brace off. If the redness does not go away after 30 minutes, stop wearing the brace and contact your physician. Skin inspection is extremely important as you may not be able to feel the areas as you did before.

## ASSISTIVE TECHNOLOGY

Patients with spinal cord injury or impairment may have limited movement in the arm(s), hand(s) and/or leg(s). Those with limited mobility in the upper body may be concerned that independently operating a TV/VCR/CD player, answering a phone and being functional on a computer will no longer be possible. These issues and many more are addressed in the Assistive Technology (AT) Clinic at Frazier which is available to both inpatients and outpatients. When you are evaluated in the Clinic, you will learn about and be given the opportunity to use various pieces of assistive technology that may help you be more independent in your home, work or school environments.

Assistive technologies, as defined by the Assistive Technology Act of 1998, are “products, devices or equipment, whether acquired commercially, modified or customized, that are used to maintain, increase or improve the functional capabilities of individuals with disabilities.” Environmental control, computer access and home accessibility are three assistive technology areas of focus in the AT Clinic at Frazier.

**Controlling Your Environment.** In the AT Clinic, you may be introduced to technologies that allow you to operate room lights, TVs, radios, fans, small appliances and phones to name but a few. Simple switches, with or without mouth sticks, or touch pads may be used to turn on/off a piece of equipment. On the ‘higher end’ of technology, environmental control units (ECU) may be computer based and use voice recognition software to operate home equipment. ECUs typically control TVs, lights, etc., but can also control equipment in many areas of the house, e.g., entrance door locks, curtains, thermostats and hospital bed positions. ECUs can also be installed or integrated into a power wheelchair configuration. Some ECUs and specialized phones offer hands-free phone capabilities.

**Computer Access.** Since computers are used for leisure, work and/or school related activities, computer access is often needed for those with upper extremity limitations. The AT Clinic can, if desired, introduce you to adapted keyboards, touch screens, sip and puff devices, adaptations available for a computer mouse, mouth stick use and voice recognition to name but a few. Specific computer software is also available to increase one’s productivity and independence. Recommendations are also made regarding the proper set up of computer tables/workspace to increase computer usability and minimize user fatigue.

**Home Accessibility.** Being able to move around in your home environment is important for one’s independence. Your independence may be increased with installation of an outdoor ramp to your entrance door, power door openers, a stair lift or specific bathroom equipment. Other items many consider include grab bars in a bathroom, a hand-held shower head, replacing round door knobs with lever style handles, lowering light switches and raising electrical outlets.

Home remodeling might include widening narrow door/hallways needed for wheelchair or walker access; installing a roll-in shower; lowering the height of cabinets in the kitchen, bathroom and/or home office for efficient use at a wheelchair level; and installing a ceiling mounted patient lift system which can move a person from bed to wheelchair, toilet and/or

bath tub to name but a few. Some users of a 'patient lift system' are able to operate the lift without the assistance of another person.

As stated, therapists in the AT Clinic will give you and your family information regarding available technologies designed to improve your independence and quality of life. Additionally, they will help determine the most affordable equipment that might meet your needs and explore funding options/resources with you.

## REFERENCES AND RESOURCES

Martin S and Kessler M. *Neurologic intervention for physical therapist assistants*. 1<sup>st</sup> ed. Philadelphia: WB Saunders; 2000.

<http://www.abledata.com> - Equipment data base

<http://www.wheelchairnet.com> - Wheelchairs

<http://www.wheelchairdealer.com> - Wheelchairs

<http://www.wheelchairjunkie.com> - Wheelchairs

<http://www.rehabtool.com> - On-line assistive technology catalogue

<http://www.resna.com> - On-line assistive technology catalogue

<http://spinalcordcenter.org/manual/index.html> - Equipment

<http://www.sportaid.com> - Wheelchairs

## GLOSSARY

**ABDUCTION WEDGE** - An attachment for the seat of the wheelchair to keep the legs in a neutral position.

**ADDUCTION WEDGE** - An attachment for the seat of the wheelchair to keep the legs in a neutral position.

**ANKLE FOOT ORTHOSIS** - A brace placed into the shoe that comes up on the back of the lower leg and straps around the calf. It is used to help keep the foot from resting in a dropped down position and to help prevent the toes from dragging during walking.

**ANTI-TIPPERS** - Projections placed on the back of the wheelchair to prevent the chair from tipping backward during transfers, pressure relief, and propulsion over uneven surfaces.

**ASSISTIVE TECHNOLOGY** - Advanced technology created to make tasks possible or easier for individuals with physical disabilities.

**CAMBER** - Slanting of the top of the rear tire in toward the wheelchair

**CASTERS** - The small wheels on the front of the wheelchair.

**CHEST STRAP** - A strap that goes around the chest to keep the body upright in the wheelchair.

**CHIN CONTROL** - A control used to drive a power chair that is activated by chin movements.

**CLOTHES GUARD** - A plastic or cloth attachment to the wheelchair to prevent clothes damage during movement of the wheels.

**DORSAL WRIST SPLINT (ADL SPLINT)** - Allows the wrist to be supported for better hand function. It has a cuff part that can be used to hold an ADL item such as a spoon or fork to increase the use of the hand in self-care activities.

**ELBOW EXTENSION SPLINT OR CAST** - Splint used to reduce tightness to allow normal elbow ROM.

**ENVIRONMENTAL CONTROL SYSTEM** - Advanced technology systems for home or office used to control lights, phone, doors, television, bed and other items using remote control devices.

**FRAME** - Main part of a wheelchair to which all other parts are attached.

**GOALPOST** - A control used to drive a power chair that looks similar to a football goalpost.

**GRADE AIDS** - An attachment mounted along with the brakes on the wheelchair that allow the wheels to roll forward, but prevent them from rolling backward when going uphill.

**HANDRIM** - Rim on the outside of the wheels that provide a surface on which to push to move the chair.

**HEAD CONTROLS** - A control used to drive a power chair that is activated by head movements.

**LATERAL SUPPORTS** - Supports placed on the side of the chair to keep the trunk upright while sitting in the wheelchair.

**LOANER WHEELCHAIR** - A wheelchair that is loaned to a patient from the equipment vendor until the custom wheelchair can be ordered and delivered.

**LONG OPPONENS SPLINT** - Splint with a component to position the thumb in order to improve grasp and release during self-care activities.

**MANUAL WHEELCHAIR** - A wheelchair that requires the user to push the wheels for movement.

**MP BLOCK SPLINT** - Splint that supports the joints of the fingers to prevent clawing of the hand and promote normal grasp and release movement during functional tasks.

**OVERHEAD SUSPENSION SLING** - Sling that can be used to support weak muscles against the force of gravity, while allowing the individual to use the hand for functional tasks such as feeding and computer tasks. Moveable rods can allow the individual to adjust the height for different tasks.

**POWER ASSIST WHEELCHAIR** - A mixture between a manual and power wheelchair. It has the frame of a manual chair, but has power driven wheels to assist with propulsion.

**POWER WHEELCHAIR** - A battery powered wheelchair that moves by a controller.

**PRESSURE RELIEF** - The act of taking weight off a part of the body that has had pressure on it for a long period of time.

**PUSH HANDLES** - Handles on the back of the wheelchair used by a caregiver to push the chair.

**RENTAL WHEELCHAIR** - A wheelchair that is rented by a patient or insurance company to use for a short period of time.

**RESTING HAND SPLINT (RHS)** - Splint that keeps the hand in a position that supports the wrist and hand to reduce the risk of joints getting stuck in one position.

**SHORT OPPONENS SPLINT** - Splint that allows tenodesis use of the hand in individuals with the ability to use their wrists.

**SHOULDER SUPPORT SLINGS** - Sling used to support a weak or painful shoulder and arm, especially in individuals who are working in a standing position in which the arm would dangle without a sling's support.

**SIP AND PUFF CONTROL** - A control used to drive a power chair that is activated by a series of sips or puffs on a straw.

**SKIN INSPECTION** - Looking at the skin for areas of redness or skin breakdown, especially over bony areas of the body.

STANDING FRAME – A device that holds a person in a standing position.

SPOKE GUARDS - Plastic covering placed over a wheel to protect the spokes from damage.

TENODESIS - The ability to pinch or grasp objects with the thumb and index finger through the use of a specific wrist movement.

TENODESIS SPLINT - Allows proper positioning of the fingers and thumb when the wrist is bent back to allow one to grasp and release objects.

TILT IN SPACE WHEELCHAIR - A wheelchair that tilts backward while keeping the user in a seated position.

TRANSFER - Technique used to move from one surface to another.

UNIVERSAL-CUFFS (U-Cuff) – Splint that allows user to hold ADL items without grasp

VENTILATOR TRAY - An attachment used to transport a ventilator on the wheelchair.

WRIST COCK UP SPLINT - Splint that supports the wrist in a bent back position for better hand use.