



MEDICAL DEVICES AND WHEELCHAIR SEATING AND MOBILITY CONSIDERATIONS

Written by: **MICHELLE L. LANGE, OTR/L, ABDA, ATP/SMS**

Wheelchair seating is designed to provide postural support and stability, optimize function, provide a position of rest and manage pressure issues for wheelchair users of a wide range of ages, diagnoses and settings. Many wheelchair users also use specific medical devices that may require accommodation within the seating system or the wheelchair frame itself.

GASTROINTESTINAL (GI) SYSTEM RELATED MEDICAL DEVICES

Wheelchair users may have a variety of implanted devices related to feeding, digestion and elimination. These may include gastrostomy tubes (these may enter the digestive tract at various levels, i.e., G-tube, J-tube, etc.), cecostomy tubes (entering the colon) or an ostomy bag.

Certain secondary supports may cover or catch the edge of these medical devices. When a secondary support, such as an anterior vest style trunk support, covers a medical device, (such as a G-tube), this is not usually a concern, though access to the tube is now limited. If a cut-out is made in this anterior support, the edges are likely to catch on the device. The lower edge of a vest style anterior support may also catch on one of these medical devices. This "catching" can lead to irritation, leakage and even inadvertent removal of the tube or injury to the tissues surrounding the device. Occasionally, a pelvic belt may also interfere with a device placed low on the abdomen, particularly if a higher angle of belt attachment is required. It is critical to explore options of secondary support styles and angles of attachment to avoid interference with GI-related medical devices.

In general, placing seating components in front of the abdomen with constriction, such as an abdominal panel, can lead to issues with gastric emptying and digestion and possibly increase reflux and constipation in some clients.

Some wheelchair users require a "Kangaroo bag" for gravity assist or pump feeding via a gastrostomy. A pole can be mounted to the frame to support this equipment at the required height so that the client does not need to rely on a separate rolling IV style pole. The pole may need to be removable or fold in some way as to not impact accessibility.

RENAL SYSTEM RELATED MEDICAL DEVICES

Wheelchair users may utilize a variety of options to address incontinence. Incontinence is a critical issue in wheelchair seating, as

urine and fecal matter have a very detrimental impact on skin PH and moisture, heat and bacteria all decrease skin integrity – increasing risk of a pressure injury.

If a client is wearing some form of diaper or incontinence pads or underwear, these products can add to body dimensions. This needs to be compensated for in seat width and sometimes in back shape due to increased padding behind the buttocks. Control of the position of the pelvis can be more difficult if a bulky incontinence product is used. Often, a pelvic belt placed at approximately 60 degrees will end up just below this padding, providing better contact.

For a client using an internal or external catheter, it is critical that no seating components constrict or pull the tubing. Check the full cycle of movement of all mechanical or power seating (i.e., tilt, recline, ELRs) to ensure that the tubing is not pulled, as well. If the client is using a power leg bag emptier, it is important to place the end such that, when opened, no liquid contacts the wheelchair frame if possible. Leg bags can leak during tilt, so angle of tilt and leg bag placement must be considered. The leg bag should not be placed below the level of tilt, as this can lead to pulling or catching of the tube.

Some clients use a suprapubic catheter for voiding. A pelvic positioning belt may cover or 'catch' this medical device and can lead to discomfort. The belt may have to be moved to a lower position to prevent this interference. Bodypoint has a pelvic belt with ASIS pads which provide targeted contact at the ASISs without pressure against soft tissue. Finally, placing seating components in front of the abdomen with constriction, such as an abdominal panel or a pelvic belt mounted at a higher angle, can prevent full bladder emptying in some clients.

RESPIRATORY SYSTEM RELATED MEDICAL DEVICES

Wheelchair users may utilize medical devices to assist with respiratory function. This may include suction equipment, oxygen, tracheostomies (trach), and ventilation (including ventilation assistance such as CPAP or BiPAP, as well as ventilators).

If a client is using oxygen, the tubing may interfere with a head support and mounting hardware. The oxygen tank or concentrator must be supported by the wheelchair frame, either by hanging the straps on the push handles or using a dedicated holder designed for the specific model.

Clients with a trach must usually be placed in a neutral to slightly extended neck position, as neck flexion can sometimes impact trach function or occlude the opening. This is particularly important in children or people with shorter necks. The trach is typically secured to the neck with a strap. If a ventilator is attached to the trach, the tubing is typically secured to the trach in some way to prevent this from easily becoming disconnected. It is important that nothing in the seating system or wheelchair frame catches and/or pulls on this tubing. The tubing may also be secured to the client's shirt to minimize this risk. CPAP or BiPAP may only be used in bed but are sometimes used in the wheelchair. The mask and tubing, as with a ventilator, must not be pulled by the wheelchair seating system. The base equipment will also need to be supported on the wheelchair frame by some sort of tray or basket. These clients often have other medical equipment that will also need to be stored on the wheelchair, including oxygen, suctioning machine, and related supplies.

TONE MANAGEMENT DEVICES

Many wheelchair users with increased muscle tone have a Baclofen pump implanted as part of a tone management program. The pump itself is about the size of a hockey puck and is placed in the lower abdomen. Depending on the size of the client and the exact placement of the pump, certain secondary supports, particularly pelvic belts and anterior vest style trunk supports, may "catch" on the edge of the pump. While this should not interfere with the pump's functioning, this rubbing can lead to client skin irritation and discomfort. As mentioned above, placement of secondary supports should avoid contact with this medical device.

Other medical devices may temporarily or permanently impact wheelchair seating and mobility interventions. It is important to work with the medical team to be aware of potential risks and problem-solve solutions.

CONTACT THE AUTHOR

Michelle may be reached at
MICHELLELANGE1@OUTLOOK.COM

Michelle Lange is an occupational therapist with over 30 years of experience and has been in private practice, Access to Independence, for over 10 years. She is a well-respected lecturer, both nationally and internationally, and has authored numerous texts, chapters and articles. She is the co-editor of Seating and Wheeled Mobility: A clinical resource guide, editor of Fundamentals in Assistive Technology, Fourth Edition, NRRTS Continuing Education Curriculum coordinator and clinical editor of NRRTS DIRECTIONS magazine. Lange is a RESNA Fellow and member of the Clinician Task Force. She is a certified ATP, certified SMS and is a senior disability analyst of the ABDA.

