

Avoiding Pressure Injuries and other Complications with Proper Seating and Wheelchair Systems

By Susan Johnson Taylor, OTR/L

Audience: Intended for clinicians, wheelchair users and other interested parties with limited/basic knowledge of Assistive Technology.

Determining a cushion that provides appropriate pressure distribution and positioning for a client is not a trivial task and is critical to the long term health and overall comfort/sitting tolerance of the wheelchair user.

Clients with long-term or severe disabilities generally have a medical necessity for individually configured seating supports due to weakness, spasticity/abnormal muscle tone, movement disorders, and/or orthopedic deformity of the pelvis, spine or lower extremities. Clients with long-term disabilities are often at high risk for pressure injuries due to such reasons as absent or decreased sensation and/or an inability to reposition themselves to relieve pressure.

Every person's situation and risk factors for pressure injuries is unique due to a variety of factors.⁽¹⁾ Part of the clinical Custom Rehab Technology (CRT) team evaluation are questions not only about the seating and wheelchair use, but also where else the client sits during the day. The causes of pressure injuries are multi-faceted and can be complex. One aspect of decreasing this occurrence is the provision of an appropriate seating and wheelchair system.

It is well documented that poorly prescribed and fitted seating systems can lead to pressure injuries as well as other complications - such as furthering postural deformities. A proper clinical evaluation should be conducted by a clinical team which includes an OT or PT as well as a supplier who is a certified Assistive Technology Professional (ATP).

Seating solutions to address potential pressure injuries and related complications are determined on an individual basis. When applying these solutions, the clinical team will look at primary supports and secondary supports.⁽²⁾

Primary Supports

These are the primary weight-bearing components, including seat, back support, arm support and foot support. These supports are the “main characters” in the seating system. These are the supports that provide the bulk of the pressure distribution and provide the foundation for postural control. This may include everything from off the shelf cushions to modified off the shelf solutions to custom contoured components.

Secondary Supports

These are contact surfaces that provide secondary support. Typically they are lateral (on the side) of

the client, posterior (in the back of) the client (not including the back support) and anterior to (in front of) the person. These components are the “supporting roles” in the seating system. These can include lateral trunk supports, head supports and pelvic belts/chest harnesses.

The seating is one part of the equation in the seating and wheelchair system. For those who are unable to reposition themselves for the purpose of a pressure relief, there are features available on powered and dependent manual wheelchairs that mechanically allow the client or a caregiver to perform a pressure relief. These can include powered tilt and/or recline and powered standing for powered wheelchair bases, and manual tilt and/or recline for dependent manual wheelchairs.

Lastly, there is a tool that can assist in the choices for seating and wheelchair systems. Pressure mapping, when a clinical protocol is followed, guides the clinical team toward seating choices as well as tilt and/or recline necessity. In addition, it can assist in determining if the client is able to perform an effective pressure relief consistently.

While the medical necessity for a seating system will differ for each client, the end goal is always the same: providing the most optimal seating and mobility environment. When this is done properly, pressure injury issues can be mitigated and the client will be better served.



About the Author

Susan Johnson Taylor, OTR/L is an occupational therapist who has been practicing in the field of seating and wheeled mobility for 35 years, primarily at the Rehabilitation Institute of Chicago. Susan has published and presented nationally and internationally, has consulted on product development for manufacturers, and has actively participated in a variety of research studies at the Northwestern Sensory Motor Performance Program. Susan is both a member and fellow with RESNA, and in the past has served on the Board of Directors. She is a member of the RESNA /ANSI Wheelchair Standards Committee and the Clinician's Task Force. Susan joined the Numotion clinical education team in 2015 as the Manager of Training and Education.

(1) www.NPUAP.org (National Pressure Ulcer Advisory Panel - educational website including clinical practice guidelines)

(2) Waugh, K; Crane, B; Taylor, S; Davis, K; Cwertnia, S; Brown, L; Saftler, F; Christie, S. *Glossary of Wheelchair Terms and Definitions*. U of Colorado, Assistive Technology Partners, through a grant from the PVA. 12/2013.