

GERIATRIC POSITIONING AND MOBILITY CASE STUDY

Mary is an 80-year-old lady residing in a nursing home. She was often in pain from arthritic changes in her hips and back. Additionally, with the onset of dementia she was often found yelling "nurse" to try and get attention and go back to bed. She had been provided with a geri chair (*photo 1*) to sit in when not in bed. Mary was constantly sliding forward and out of the chair and, because she could not get out of the chair independently, this could be considered a restraint.

The home provided her with a "loaner chair" to sit in, which was a standard wheelchair with adjustable angle back canes, a solid back and a seat cushion. Although this provided her with a little more comfort, she was unable to wheel herself due to the wheel position and size (*Photo 2*). Additionally, the back angle was increased so much to accommodate her kyphosis that she was no longer able to feed herself at a table (*photo 3*). Interaction with others was still difficult as her head was not in a functional medial/upright position (*photo 4*), and therefore she had to strain her neck to look up. Lack of mobility and the required effort to position herself for activity limited her interactions and activity participation.

Mary was then provided with a tilt in space wheelchair with supportive and comfortable seating (*Photos 5-7*). With the chair set up to maximize propulsion, with optimal angles for eating and activity, and adequate support for rest and communication, Mary became more alert, involved and no longer screamed for the nurses to put her back to bed. Proper seating and mobility allowed her to become a part of the life of the nursing home again instead of someone that was placed behind closed doors to reduce the "noise."

As clients with medical, physical and often mental conditions age, we must deal with their inherent orthopedic and muscular changes, as well as difficulties they begin to experience as their internal systems begin to fail. Often the trunk becomes severely curved with the force of gravity on weak muscles. Sliding out of chairs or falling becomes a common complaint with protective fetal positioning occurring. Fragile bones from osteoporosis complicate the mobility of stiff joints. Weak hearts, decreased lung capacity and arthritic changes decrease mobility and strength for moving and manipulating assistive technology. The challenge then is to respect the client's need for comfort while at the same time supporting them against gravity for function and interactions with others within their environment and within their cognitive functional capacity.

The importance of observing orthopedic and tonal changes as clients age and how they are affected by their seating support surfaces is critical. Human beings are adaptive. When a seating system can no



PHOTO 1 - GERI CHAIR WITH INADEQUATE POSITIONING, RESTRAINT INFRINGEMENTS, DISCOMFORT, AND LACK OF MOBILITY, INDEPENDENCE AND SELF-ESTEEM.



PHOTO 2 - LOANER WHEELCHAIR WITH ANGLE ADJUSTABLE BACK AND MODULAR BACK AND CUSHION SUPPORT, BUT WHEEL SIZE AND SET UP NOT CONDUCTIVE TO SELF-PROPULSION.



PHOTO 3 - LOANER WHEELCHAIR WITH SEAT TO BACK ANGLE SUPPORTING KYPHOSIS, BUT NOT ALLOWING FOR INDEPENDENT EATING AT TABLE TOP.



PHOTO 4 - LOANER CHAIR NOT ALLOWING FOR EFFECTIVE COMMUNICATION WITH OTHERS. NECK STRAIN TO LOOK UP.

Adaptability in equipment design, prescription and timeliness of reassessment is necessary to accommodate the aging process.

longer accommodate changes in function, physical stature or psychosocial needs, the aging human body will likely adapt to the equipment currently in use, whether that be safe or not, in order to provide the necessary posture for function. This is an even greater risk with the cognitively impaired population (Alzheimer's disease or dementia) as the client may not be aware of or cannot communicate the changes that are happening to them. Further deformities in postural alignment will then occur as a result of the body changing without a subsequent change in the seating system. In providing assistive technology for this population, we must assess the need proactively for change. Adaptability in equipment design, prescription and timeliness of reassessment is necessary to accommodate the aging process.

The following are common bodily changes that occur with aging and need to be considered when prescribing equipment:

Skeletal changes: calcium loss with increased fractures and non-union healing, posterior pelvic tilt, kyphosis/scoliosis due to weak abdominal/back musculature, stiff and painful joints due to lack of movement or arthritic changes. Consider: increased shock absorption in mobility systems, pressure relieving seating, correct seat-to-floor heights for foot propellers, adjustable seat to back and seat base angles, adjustable armrest heights and support surfaces for feet and upper body.

Muscle, heart and lungs: size and strength decreases, lungs become less pliable with reduced capacity, clients have less energy and tolerances for mobility or sitting, decreased blood flow creates less elasticity to skin. Consider: ultra lightweight bases with proper set up to improve mobility – camber, axle position for center of gravity, rigid frames with flip up or swingaway footplates, or power bases to reduce reach and effort for mobility, pressure relieving cushions and back supports.

Kidney and bladder: decreased size, less blood filtration, enlarged prostates. Consider: incontinent covers, size or need for medial knee support, ease of transfers to encourage toileting.

Stomach and intestines: decreased swallowing quality due to kyphotic changes, suppressed appetite, constipation from decreased motility and lack of water consumption. Consider: dynamic tilt for positioning for feeding/swallowing, postural support for upright posture to open the abdominal cavity, trays for improved support of the upper extremities.

Endocrine and glandular changes: hormonal changes resulting in fragile bones. Consider: shock absorbing bases, pressure relieving cushions and backs, comfort positioning versus correction.

(CONTINUED ON PAGE 42)

GERIATRIC POSITIONING AND MOBILITY CASE STUDY
 (CONTINUED FROM PAGE 41)

Nervous system: decreased sensation to touch and temperature, slower movements due to decreased nerve activity to muscles, decreased balance and reaction timing. Consider: support surface temperatures, high pressure relieving surfaces, plastic coated or Naturalfit handdrims.

Sensory changes: poor vision for far, near, and colors, poor hearing, decreased taste and smell (possibly leading to decreased food intake with weight loss and poor skin conditions). Consider: bright visual colors, large bright LED readouts, adjustable mobility systems to accommodate weight changes.

A full assessment is critical with each evaluation. Multiple conditions and dysfunction within the body may increase the speed in which changes occur. Special consideration needs to be taken for at risk skin areas, bony protrusions, tone and contractural changes from lack of movement and long term hemiparesis. The following are important areas in assessing the aging population:

- Prognosis and potential for change
- All other medical complications, diseases, and diagnoses
- Previous or planned surgeries (i.e. due to hip fractures)
- Nutritional status and planned changes in dietary supplements
- Changes in the environment – home to long term care
- Cognitive status
- Ability to identify and communicate pain
- Stimuli that promote relaxation or agitation
- Destructive behaviors

When cognitive function is also limited, it is critical that all team members are involved in determining assistive technology needs. Outcome documentation is critical for observing skin condition, respiratory distress and behavioral changes which may indicate discomfort or pain. The potential for falls must also be assessed in the aging population. Falls are common in the elderly population and can pose a serious threat to their mental and physical health. Every year a third of all persons 65 years and older who reside in the community report one or more falls. Falls are the

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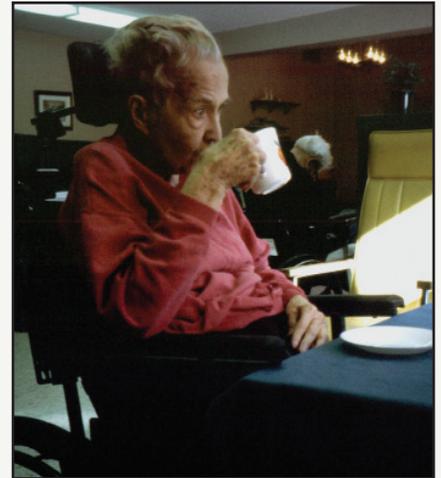


PHOTO 5 - TILT IN SPACE WITH ANGLE ADJUSTABLE BACK, MODULAR BACK SUPPORT AND PRESSURE MANAGEMENT/COMFORT CUSHION TO REDUCE PAIN AND PROVIDE FULL SUPPORT. THIS ALLOWS FOR INDEPENDENT EATING AT A TABLE.



PHOTO 6 - ABILITY TO SELF-PROPEL IN TILT IN SPACE WITH PROPER SET UP.



PHOTO 7 - TILT IN SPACE ALLOWS FOR COMMUNICATION AND ACTIVITY WITH OTHERS WITHOUT POSTURAL STRAIN.

second leading cause of accidental death and can also result in a fear of instability and falling in those who have fallen previously. As a result, falls can lead to decreased mobility, individual and family distress, long term care placement, and the use of chemical and physical restraints. In institutionalized clients, falls can account for up to 90 percent of all reported incidents. Falls and resulting injuries are not random, unpredictable events, but are understandable and preventable. Falls are the result of the interaction of physiological, social and environmental factors. By assessing these areas, and then providing the client with assistive technology to decrease the risk, the likelihood of severe deterioration can be avoided.

With respect to seating and mobility technology, poor use or understanding of seating products and lack of independent mobility can limit sensory stimulation, interaction, participation and communication. Inappropriate seating can create pain through poor posture, inflexible joint ranges, and pressure points. Pain can become a primary focus in the aging population and further create impaired mobility, decreased participation in pleasurable activities, increased dependence in activities of daily living, increased resistance to care and confused or aggressive behaviors. This is when “restraint use” comes into play versus the consideration of proper pressure management and postural control.

Therefore, to reduce restraint use, seating programs must be developed in order to prevent physical and cognitive deterioration in clients as they age. The program must be a team effort for full intervention in areas of seating and mobility assessment, skin care, nutrition, transfers, nursing care, family wishes and client concerns. Many aging clients have minimal support and intervention, when more is typically indicated by the needs of this population.

Goals of the seating program should be to:

- Decrease pain and fatigue through chair set up and cushion/back support
- Increase comfort through support surfaces and foot/arm support
- Increase support and security through secondary supports ONLY after the primary supports and chair set up has been accomplished
- Increase mobility through appropriate chair style, and set up
- Increase body image
- Increase behavior by being cognizant of comfort and support issues related to chair set up and use
- Increase stimulation with increased alertness by providing optimal alignment and mobility requiring the least amount of effort
- Increase interactions by improving effortless mobility
- Maintain autonomy and interaction with the physical and social environment
- Maintain overall function, dignity and self-esteem – individuality of seating and mobility systems...one size doesn't fit all!

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Once the parameters of the equipment have been determined and provided, then a variety of specific products can be recommended by the technology supplier. By developing objectives, and parameters, lengthy and tiring trials of inappropriate equipment can be avoided. Outcome data after trial will provide a record of the benefits of the technology being prescribed. These benefits must then be demonstrated to funding agencies, family and staff. The most important outcome for the client is the increased comfort and feeling of well-being and safety our elderly gain from utilizing the assistive technology that has been carefully prescribed for them. Involvement in daily life activities and decision making returns to the elderly the respect which they deserve and desire. ➡

CONTACT THE AUTHOR:

Sheila may be reached at
therapynow@cogeco.ca.