

# **INDIVIDUALIZED WHEELCHAIR SEATING: FOR OLDER ADULTS**

## **Part I: A Guide for Caregivers**

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**INDIVIDUALIZED SEATING WORKS**

How people sit is fundamental to their health. The standard sling seat, sling-back, collapsible wheelchair was designed to transport people short distances, for short amounts of time, to assist the person pushing the chair, and to make storage easy. The chair works for the caregiver, but very poorly for the person in it, particularly if it is used for long periods of time and as the primary seating system for the individual. When frail elders are properly seated in chairs designed to meet their particular needs, improvements can occur in:

- Posture
- Comfort and wheelchair tolerance
- Skin condition
- Ability to care for self
- Efficient use of limited energy and endurance
- Socialization
- Quality of life
- Caregiver burden

**Improved Posture**

Improving posture can enhance a number of functions in the elderly; however, as a result of illness or orthopedic changes many elders have postures that cannot be corrected and can only be supported. The first step in achieving proper seating is a seating assessment. A seating assessment by a physical or occupational therapist is required to determine if the person needs accommodation of fixed posture and/or support of flexible posture. The assessment should include a physical evaluation, in which the person is transferred out of the chair or wheelchair and onto a mat or hard surface. This allows the therapist to evaluate the person both lying down and in a seated position for fixed joints, spasticity, pain, and skin problems.

With better positioning and/or support through proper seating, physiologic functions such as breathing, swallowing, digestion and elimination are improved. Respiratory function improves in several ways. The chest cavity more easily expands if the person is not slumped forward. Many frail elders have a delayed swallow that places them at risk for choking or aspirating (taking food or fluid into the lungs). It is essential that the person sit upright for meals so that food and particularly liquids can be better controlled and to aid the normal gravitational flow into stomach. Needless to say, if a person is constantly choking, food may often be refused. The ability to move the bolus of food in the mouth may be improved if the person with a normal swallow and kyphotic or curved back (resulting in a forward head and neck position) is properly supported and positioned so that gravity can assist in getting the food to the back of the mouth. Also, elongating the abdominal region through proper positioning allows food to

move more easily through the digestive tract and better utilize gravity to facilitate digestion and elimination.

Good positioning can also improve eye gaze, that is, the visual field created by the position of one's head. If older persons have stooped posture, the eyes naturally fall lower, sometimes to the floor, requiring a considerable effort to raise the eyes or head to see what is in front of them. Even if the posture is fixed, as with a kyphotic or curved spine, improvements can occur. For example, positioning the wheelchair at even a 15 degree recline may bring the eye gaze level, making it easier for the person to attend to what is going on around him and socialize (see Chapter 2).

### **Improved Comfort and Wheelchair Tolerance**

Comfort is an important concern of frail elders. Comfort is achieved or improved through proper support and positioning. Wheelchair tolerance or the amount of time the person feels able to be up in the chair can be used as a practical indicator of comfort. That is, comfort is directly related to wheelchair tolerance. If the person is uncomfortable in the wheelchair or gerichair, he will often ask to go to bed sooner and refuse to become more involved in activities.

Older adults experience more pain than younger people, for many reasons. They often suffer from arthritis or other chronic illnesses that have pain associated with them. Often pain is unidentified or under treated in the frail elderly. Many frail elders have diagnosed or undiagnosed spinal fractures that can be a source of pain. Often with proper positioning and support, this type of pain can be dramatically reduced.

Persons with dementia may not have the verbal or cognitive ability to express their pain in words or even respond appropriately when asked if they are in pain. However, their behavior is often a good indicator of pain. One nurse clinician working in a large Midwest teaching hospital found that out of 18 nursing home residents referred to an outpatient clinic, inpatient medical unit or inpatient psychiatric unit for screaming/yelling behaviors, 15 had undiagnosed or unstable fractures (Geri Hall, personal communications, August 8, 1997).

### **Prevention of Skin Breakdown**

Proper cushions and support prevent skin and tissue breakdown by more evenly distributing pressure, thus allowing the individual to be up for longer periods without causing damage. Some fabric cushion covers wick away moisture/fluid from the skin. Heat may also contribute to skin breakdown, and some cushion materials (air, fluid) are cooler than foam (see Chapter 6).

**Improved Ability to Care for Self**

A properly fitted wheelchair can improve the person's ability to care for himself in many ways. For example, correct arm rest length and height allow the chair to get under the table so that at meals the person can be close enough to reach the food and feed himself. It gives the person a level eye gaze so he can see in the mirror for grooming. Further, with the proper chair many people can wheel themselves from place to place.

**Better Use of Limited Energy and Endurance**

Frail elders often have limited stamina, endurance and energy. When one is not positioned properly, energy is required simply to remain upright. When properly equipped, the ability to self propel is enhanced and requires less expenditure of energy. The standard wheelchair weighs between 40-50 pounds, a lightweight chair weighs 24-28 pounds, and an ultralight chair can weigh even less (18-21 pounds). Choosing a lighter weight chair can save energy for use with other activities. Having the seat low enough so that the person who ambulates with his feet can get a good heel strike (connection of the foot to the floor) also improves efficiency. Providing a chair with the proper width so that the person can easily access the hand rims on the wheels is another way to better conserve limited energy. Being comfortably seated and positioned for eating may mean that the person will eat more because he is not too fatigued to finish the meal. With proper support, the person can relax and focus on other activities such as eating or conversing.

**Improved Socialization**

Improved socialization can result from a combination of the factors already mentioned such as level eye gaze, the ability to move oneself in and out of social situations, and increased comfort. Improved socialization may also be related to eliminating restraints. Individuals often find restraints uncomfortable, humiliating and degrading, causing them to shrink from social situations.

**Improved Quality of Life**

It goes without saying that if a person is more comfortable, more independent, and has better physiologic function, that person will have improved quality of life and self-esteem.

**Easing of Caregiver Burden**

When properly seated, frail elders may be easier to transfer, or able to transfer themselves, and able to feed or toilet themselves; they may require less repositioning (creating less back and shoulder stress for the caregiver), tolerate

being up for longer periods, and have fewer behavioral problems. All these ease the caregiver's burden.

### **CASE EXAMPLES OF BENEFITS OF PROPER SEATING**

The following case examples illustrate many of the benefits of proper seating.

#### **Case 1 – Marguerite Parker**

Ninety-seven year old Marguerite Parker was in the typical wheelchair with a sling back and a sling seat with an inexpensive foam cushion. Her thighs were rolled inward and her pelvis was in a posterior pelvic tilt, which made her trunk collapse and her movements limited, affecting her breathing and circulation. Consequently, Mrs. Parker suffered from considerable back pain, making her irritable, as manifested by crying, angry outbursts and refusing all activities. A physical therapist conducted an evaluation, including a physical assessment on the mat to assess her needs. She discovered that Marguerite had:

- A fixed posterior pelvic tilt or forward thrust of pelvis;
- Hip range of motion limited to 90 degrees;
- Shortened hamstring muscles;
- A fixed thoracic, kyphotic spine causing her head to be positioned forward

The therapist recommended a smaller, lightweight chair and a solid, contoured back and seat system. Putting Mrs. Parker in a wheelchair with smaller diameter (20-inch) wheels provided her with enough range of motion to bring her elbows back far enough to have full excursion on the wheel so she could more easily propel her wheelchair. The stability and contoured support that Mrs. Parker received from the new seating system also protected her skin with better distribution of pressure. Finally, the system stabilized her pelvis, allowing elongation of her trunk and resulting in better upright sitting, energy conservation and comfort.

The overall results were dramatic. Before, because of her pain, Mrs. Parker had been very withdrawn, not talking to people or attending activities. Following the improvements in her seating, she became clearer cognitively and moved easily through the facility talking to others. She was more comfortable, aware and pleasant. Her son was amazed and pleased with the differences. Mrs. Parker lived another four years, continuing to use her individualized wheelchair and maintaining her improved comfort and mobility (Pitts, 1995).

#### **Case 2 – Art Solum**

Art Solum, 75, had been residing in a nursing home for several years due to progressive gait instability and dementia. He was placed in a gerichair with a soft, tie-on restraint because he was sliding out of his facility-issued wheelchair,

even with a restraint. He continued to sit in this gerichair for two years. Like many gerichair users, during this time Mr. Solum's ability to perform daily care activities slowly declined, until he was totally fed and groomed by others. In addition, his wife and staff members had difficulty pushing and maneuvering the gerichair because it was designed mainly for lounging, not mobility. Because of the difficulty of maneuvering the chair, as well as his low interest, Mr. Solum rarely participated in facility activities.

The nursing staff were also concerned that his position in the chair posed a risk of aspiration during mealtime; and further, his transfers were becoming more difficult. At the time, the facility was working on eliminating the use of restraints and Mr. Solum had two devices in place that restricted his mobility: the recliner and a tie-on waist restraint.

The facility's rehab team, including an occupational therapist, a physical therapist, and a speech pathologist, identified Mr. Solum as a candidate for restraint elimination and improved posture through proper wheelchair seating. During the observation process, the team noted that Mr. Solum spent most of his time lying in the gerichair outside his room. He had ample room to move in the gerichair because of his small body size, and he was frequently found lying at an angle and sliding down in the chair. The mat assessment revealed:

- A slight posterior tilt;
- Mild thoracic kyphosis;
- Bilateral hip range of motion limited to 90 degrees of flexion;
- Fair trunk balance

Mr. Solum's knees were a little stiff but within normal limits for sitting, and his ankles were extended in slight plantar flexion with foot drop. His skin did not appear to have any redness or blanching and he had no previous history of skin breakdown.

Therefore, the initial equipment recommendation was a solid seat with contours to support and protect his pelvis and a solid contoured back that could recline slightly to accommodate his limited hip flexion, posterior pelvic tilt and thoracic kyphosis. The seat cushion needed enough length and padding to firmly support his thighs. He also needed the proper footrest height to secure his position in the wheelchair. Due to his slight frame, a 16-inch-wide wheelchair was also recommended.

Mr. Solum had only Medicare coverage and was not eligible for wheelchair and seating equipment through Medicaid because he was living in a nursing home. However, the facility had recently received a 16-inch-wide lightweight chair as a donation and the administration agreed to let him have the chair if it would improve his situation. In addition, the team selected a cushion and back to implement the recommendations from the assessment.

The results were again dramatic. With a few minor adjustments to the seat-to-back angle, foot rests and arm rests, Mr. Solum was able to sit upright in the wheelchair without sliding. At this point, the speech pathologist wanted to see if he could manage eating an ice cream sandwich. He not only opened the wrapper by himself but also was able to take a bite and swallow appropriately. When the occupational therapist wheeled him to the sink in his room, he washed his hands with little prompting. Although Mr. Solum still required assistance with his transfer, they were accomplished more easily from his upright seated position than from the gerichair. With his upright sitting posture in the wheelchair, he seemed more approachable and experienced more social interaction with other residents and staff members.

Mr. Solum's improved upright posture also led the restorative staff to begin a strengthening program with the goal of self-mobilization and increased strength for self-care. As he became stronger, the nursing staff recommended that the physical therapist see him for transfer training and possible gait training. He was fitted with an ankle-foot brace and could ambulate with assistance in the parallel bars. He continued a weightlifting and walking program. He managed his meals independently with some assistance in cutting up meat and opening packages. The staff and his wife found it easier to push the lightweight wheelchair than the gerichair (Jones, 1995). Mr. Solum was even able to enjoy a fishing trip to a local trout pond with the activities department.

The people in these two cases are representative of those who can benefit from individualized seating. There are many persons in care facilities and in the community with the same types of problems who could experience similar improvements. As caregivers, it is our job to identify who these people are and being the process of improving their lives through better seating.

In the last 10 years, there have been dramatic improvements in the types and costs of products available to meet needs for better seating. Chapter 4 discusses how some of the newer devices are more effective than the older ones. The fact is our population is aging and a market is developing for better seating.