

Home Health Advocate

Wheelchair Safety in Vans

A Customer-Based Home Health Care Bulletin 15.4.15

Safety varies greatly for wheelchair passengers in vans. Safety varies due to the passenger's specific type of disability, their specific kind of wheelchair, the van and its safety systems, and the van operator. Some basic safety controls apply and some custom controls may be needed. Operators of vans include families of wheelchair passengers, nonprofit service organizations, and transportation companies. In some cases a wheelchair passenger may drive themselves. Wheelchair passengers driving themselves and large transit buses and large school buses are outside the scope of this bulletin.

We've outlined safety methods, standards, and caregiver preferences—then we asked the expert—the customer.

Main Method

In most vans used to transport disabled passengers in power wheelchairs, the wheelchair is used as the disabled passenger's seat.

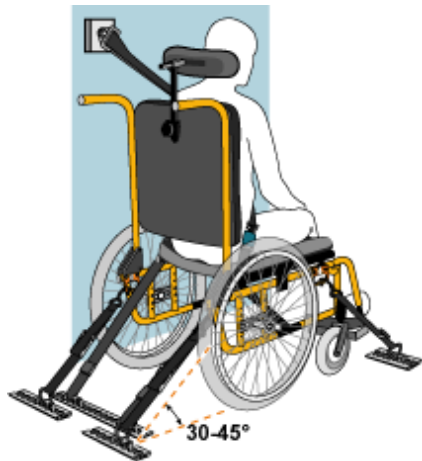
- The wheelchair is (1) secured using either a tie down or docking system. Both types of securement systems are anchored to the vehicle.
- The passenger is (2) secured with a lap belt and shoulder harness restraint system also anchored to the vehicle.

Standards Organization

The voluntary standards organization for wheelchair transportation¹ states the preferred method is to transfer the passenger from the wheelchair to a regular vehicle seat and use the vehicle's factory-installed restraint system. They go on to say passenger transfers may not be practical and using the wheelchair as the vehicle seat may be best.

The following two images show the two separate anchoring systems, four-point tie downs and shoulder and lap restraints. Both anchoring systems are anchored to the vehicle.

¹ Copyright © 2012, The University of Michigan, Transportation Research Institute and the Rehabilitation Engineering and Assistive Technology Society of North America, (RESNA). The images shown are from Ride Safe, the referenced travelsafer.org website



Caregivers

We think caregivers prefer safety and convenience for both themselves and their customers, the wheelchair passengers. Most caregivers will prefer use of lifts or ramps for entry and exit for wheelchair passengers. Most prefer to use the wheelchair as the van seat. While most caregivers would likely prefer a docking system to anchor the wheelchair vs. four point tie downs, the docking system is usually only in private vans. To accommodate varying types of wheelchairs, the four-point tie down system is most practical.

The van lap belt and shoulder harness restraints are normally simple mechanical devices similar to the lap belt and shoulder harness systems built into most all vehicles.

Transferring passengers to van seats exposes caregivers to lifting-related injuries to both themselves and the passenger. Strains are also one of the most severe and costly caregiver injuries. Health care workers have a strains and sprains injury incident rate **seven** times higher² than all other industries. Overexertion related injuries comprise 37% of home health care worker injuries.³

Customers

We asked the customer what they wanted.

Most permanently and totally disabled wheelchair passengers prefer to stay in their own power wheelchair and receive wheelchair securement and lap belt and shoulder harness restraints.

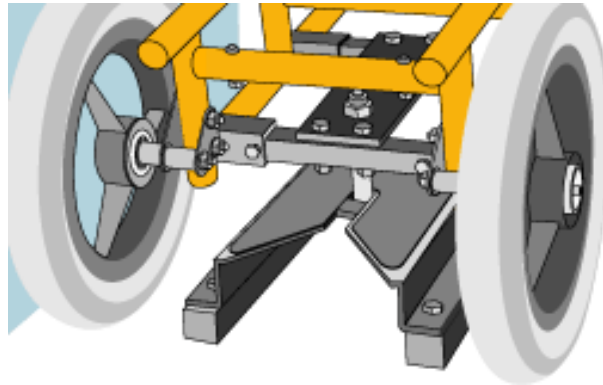
² OSHA Safe Patient Handling,

<https://www.osha.gov/SLTC/healthcarefacilities/safepatienthandling.html>.

³ Bureau of Labor Statistics Source: <http://www.bls.gov/opub/ils/pdf/opbils11.pdf>

A docking system vs. tie downs for the chair is likely the preferred choice to anchor chairs depending on the type of chair and van. When using a docking system, the wheelchair passenger may have less rocking (like on a boat at sea) and have less carsickness.

The following image (also from travelsafer.org) shows the docking system with a pin device mounted to the chair fitting into a receptor device mounted on the floor.



Transfers should be avoided especially transfers in awkward, unusual settings, such as wheelchairs to van seats. Transferring a wheelchair passenger to a factory-installed seat has inherent risks even when done by staff with some training in transfers. Transfers can produce bruises and skin shear and resultant pressure ulcers to passengers unless performed with a high level of skill. We believe a certain percentage of just poor transfers and a percentage of caregiver strains also result in transfer injuries to customers including bruises and skin shears leading to pressure ulcers. Even small slips and sudden moves can result in bruising during a transfer. Pressure ulcers regardless of their cause can have serious medical consequences.

Passengers who are ambulatory may prefer transferring from a wheelchair to a vehicle seat with modest assistance and use the vehicle's factory-installed lap belts and harness restraints.

A quad level spinal cord injury patient may need to tilt back for weight transfer to preserve healthy skin, to help prevent undesired movement and related carsickness, and for comfort.

Assure urine and fecal bags are emptied pre trip and are properly fitted and protected since spills and leaks create extenuated health and safety problems when traveling.

A paralyzed wheelchair passenger can suffer from unique incidents such as autonomic dysreflexia, a condition due to an inability to automatically regulate blood pressure. If not addressed immediately serious medical consequences can occur.

A cerebral palsy passenger may lean heavily to one side and need special accommodations. Another may need to be positioned to foresee turns so they can properly move and achieve balance during turns.

Pre trip planning should include the condition and nature of roads on the route to be used. Ideally the route should be a smooth one with limited stops.

Straps built into most wheelchairs are for positioning purposes and not for vehicle safety purposes. A chest strap for example keeps the person from falling forward when in a sitting position but has virtually no vehicle safety benefits.

Additional Good Practices

More good practices include those supporting:

- Equipment
- Maintenance
- Training
- Team Approach

Equipment

All wheelchair transportation equipment should be either factory installed or installed by a qualified conversion company and meet RESNA WC 19 standards. Equipment includes:

- Securement systems, (either four point tie downs or a docking system)
- Lap belts
- Shoulder harnesses
- Lifts
- Ramps
- Operating controls

Maintenance

Preventive maintenance is required for all equipment components and should be done by qualified personnel. Van equipment including wheelchair-related equipment should be included in driver pre- and post-trip inspections and also tied to an overall preventive maintenance plan. The minimum maintenance requirements should be the manufacturer's and any conversion company's recommendations.

The wheelchair itself is another intrinsic piece of equipment in the overall system and it must be properly maintained. Wheelchair component problems must be identified and corrected. Follow the manufacturer's recommendations for maintenance.

In an emergency, realistically a wheelchair van operator may have at least some responsibility for temporary repairs and maintenance to a customer's wheelchair. Repairs by qualified firms should be scheduled as soon as possible.

Training

Anyone who assists wheelchair passengers on and off vehicles and those who drive them must be thoroughly trained in:

- General van safety operation and safe driving
- Special equipment use
- Types of disabilities
- Types of wheelchairs
- Crisis intervention
- First aid
- Transfers
- Emergency communications

Team Approach

Ideally engage a qualified team to customize conditions for each wheelchair passenger. The team should include a physical therapist and an adaptive technology and rehabilitation specialist to both assess and fulfill individual wheelchair passenger needs. A wheelchair van conversion specialist can round out the team needed to design and achieve best results. Medical staff and others may form part of the team.

Include the wheelchair passenger's input and preferences, and incorporate the team's concluding recommendations. This team approach is not easy to achieve—strong leadership is required. A high functioning team can produce remarkable benefits especially teams who engage the customer as a team member.⁴

⁴ ©2015 Craig Hospital, Our Approach to Care, <https://craighospital.org/why-craig/our-approach-to-care>