Get wise to making sure your wheelchair remains stable

BHTA
British Healthcare Trades Association

BHTA guidelines on stability for wheelchair users

What is stability?

Generally, for a wheelchair to remain stable, it must be upright on its wheels with the combined centre of mass of the wheelchair and user being within the wheelbase of the wheelchair. These guidelines should only be used in conjunction with the manufacturers' instructions for safe use.

What affects stability?

Ramps and slopes can present a high risk to users if they try to climb, descend or travel across slopes that are steeper than the safe working limit of the wheelchair. Appropriate gradients and surfaces should not cause problems if they are within the capability of the wheelchair. Wheelchairs should only be used on ramps or slopes that are less than the maximum safe slope specified by the manufacturer.

Note: It is important to find a reputable dealer or supplier. An expert will give good advice regarding capability and suitability of each wheelchair.

Wherever possible, wheelchairs should be tested on any slopes that will be used regularly.

Steps, kerbs and soft ground

When travelling up, down or across a slope, contact with relatively small obstacles can cause instability leading to tipping or sliding. Hitting obstacles can also cause the seated occupant to slide forwards or fall forwards out of the wheelchair. Use on soft ground can lead to similar problems, as small or narrow wheels tend to sink into the ground. Negotiating kerbs or steps should be undertaken following the manufacturers' instructions, but always try to use dropped kerbs and ramps if possible.

Cushions

The addition of seat cushions will raise the centre of gravity of the wheelchair and reduce the stability of the wheelchair in all directions. The addition of a backrest cushion will move the centre of gravity forward, improving rearward stability but decreasing forward stability.

Seating systems

Seating units fitted into wheelchairs, tilting seating units or reclining backrests can have similar effects on stability to the addition of cushions, by moving the user upwards and possibly forwards or rearwards within the wheelchair compared to the original seating position. This will affect stability in all directions.

Added weight

The attachment of accessories or other items such as shopping bags, ventilators or oxygen cylinders hung or positioned on the rear of the wheelchair will move the combined centre of gravity of the user and wheelchair rearward. This may not cause problems on level ground, but it can make the wheelchair unstable when climbing a slope or ramp. Never carry passengers.

User body movement

The stability forwards, rearwards and sideways can be reduced by the user moving their upper body or by leaning out to operate switches or pick something up. However, rearward stability can be improved when climbing slopes if the user can lean forward.

Brakes
In some cases the wheelchair will slide down a slope with its brakes applied or tip if it is nearing its limit of stability. Users and carers should be fully aware of the correct method of operation of all the brakes on their wheelchair, and that the effectiveness of brakes can be reduced when the wheelchair approaches its stability limits.

Anti-tip devices
Can be added to the front or rear of some wheelchairs to give physical restriction to the amount of tipping that can occur. It is essential that any anti-tip device will have sufficient strength to function correctly when the wheelchair is carrying its maximum user mass on the steepest intended slope.

Rear wheel positions
To improve rearward stability, some wheelchairs have the option of moving the rear axle mount backwards. This could be part of an adjustable mounting or a fixed position further rearward than standard. Rear axle mounts can also be moved forward to improve the manoeuvrability and allow easier tipping to climb kerbs, but it is critical to strike the appropriate compromise between instability and ease of propulsion.

Propulsion by motor
The majority of powered wheelchairs now have the ability to programme the response of the control unit. Users should be aware that any sudden movement of the input device on a wheelchair programmed for fast acceleration can cause instability particularly on slopes or uneven ground. If this is a problem for a user, then the control unit should be re-programmed to lower acceleration settings.

Propulsion by hand
The position of the axles is critical to the safe operation of the wheelchair and any sudden or violent movement can cause the wheelchair to become unstable when climbing, descending or traversing slopes.

Weather
Care should be taken in wet or icy weather, particularly on sloping pavements or vehicle run-ups, as wheelchairs tend to slide to the lowest point.

Maintenance
Lack of maintenance or poor maintenance can lead to the wear or failure of components that may cause the wheelchair or the user to change position unexpectedly. This could lead to the user falling from the wheelchair or tipping over with the wheelchair. Manufacturer maintenance instructions should be adhered to. Always use a qualified technician to service or repair the wheelchair. See also BHTA leaflet – *'Get wise to getting more from your battery'*.

Transportation
If the wheelchair is approved by the manufacturer for transportation by a seated person, make sure that you use the wheelchair tie-down and occupant restraint system approved by the manufacturer. If you are using large public buses or trains, use the dedicated wheelchair space and any restraint systems provided.

For further information

More detailed information is contained in the MHRA guidance document ref. DB2004 (01) available from www.mhra.gov.uk or from the Medicines & Healthcare products Regulatory Agency (MHRA), Business Services, 10-2, Market Towers, No 1 Nine Elms Lane, London SW8 5NQ

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