

A Case Study on Designing a Supine Wheelchair for Safety and Transport

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Swansea's Rehabilitation Engineering Unit (SREU) received a challenging referral - to assess and potentially prescribe a wheelchair to a user with little-to-no hip flexion. This individual is currently using an ambulance stretcher as their main form of mobility equipment. This presentation will highlight the challenges around designing such a system and the approach to ensuring risk is managed, especially in terms of stability and vehicle transportation.

The aim of this case study is to highlight how SREU approached such a case and to generate discussion about the different approaches other services may have taken. It is also the aim of this presentation to support the production of guidance about transporting individuals who may have to be positioned in a more supine position due to postural limitations.

The individual has a diagnosis of Spina Bifida and has an estimated 20 degrees of hip flexion. This meant that a "standard" wheelchair wasn't suitable due to the absence of off-the-shelf wheelchairs and postural supports that could accommodate this individual's reduced hip range. The service user currently uses an ambulance stretcher as their mobility equipment, which includes both in-vehicle transportation and a member of his care team pushing the stretcher and the individual from A to B. Community therapists referred the individual to SREU for a wheelchair prescription as he has outgrown his ambulance stretcher and is no longer comfortable. Designing and prescribing such a system carries significant potential risks, especially around vehicle transportation and stability, therefore careful considerations of the benefits and accepted risks were undertaken. Several appointments took place with the service user and care team, over an 18-month period, who was fully engaged from the start as the possibility of having some independence was very important to this individual. This new system would allow the introduction of powered wheelchair controls, which he had not previously had been given this opportunity.

The design development and consideration of risks was supported by a process obtaining peer review and expertise in vehicle transportation and on how best to approach an engineering solution in wheeled mobility.

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