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## B7: Is Independent and Separated Eye and Head Movement Essential to Switch Drive a Power Wheelchair?

Bridget Dickson, PT

### Learning objectives:

Upon completion of the session, participants will be able to:

1. Have an introductory understanding of the different eye movements and reflexes involved in steady gaze.
2. Understand the components of one eye gaze rehabilitation programme used in preparation for trial of a power chair using switch controls.
3. Become familiar with a power chair trial outcome measure.

### Session description:

Locked-In Syndrome is a rare neurological condition where the individual has no volitional control of voluntary muscles except some eye movements and blinking, but maintain their cortical cognitive functions. The disorder is usually caused by a lesion, such as a stroke, in the pontine area of the brain stem. They typically communicate using partner assisted eye blinking and communication boards. Re-gaining ability to have some independent control of body position, mobility and communication using non-partner assisted communication devices are key goals for individuals who generally require assistance for all activities of daily living, mobility and communication.

The Vestibular Ocular Reflex (VOR) is mediated through the VIII cranial nerve or vestibulocochlear nerve. The nerve originates in the inner ear in the peripheral vestibular system and travels to the vestibulocochlear nucleus in the pons. The VOR's primary function is to produce stable gaze when the head is turned. Therefore it is likely that individuals with Locked-In Syndrome will have impairment in the VOR.

Two switch power chair driving with switches mounted in the head rest requires the individual to rotate their head slightly to the left and right. But in

an individual with Locked-In Syndrome who has an impaired VOR they are unable to maintain their gaze fixed on a target in front of them. Instead they initiate their neck rotation by first diagonally elevating the eyes towards the direction of the rotation. This means that the individual's eyes are no longer looking forward in the direction of driving, which is a safety concern.

In preparation for trialling a two switch controlled power chair, an individual with Locked-In Syndrome began an eye-head movement separation programme. As part of the power chair trial an outcome measure was used to determine the safety and effectiveness of achieving the goals of power chair use.

### Content references:

1. Herdman SJ and Clendaniel RA (2014). Vestibular Rehabilitation (4th Edition). FA Davis Company: Philadelphia.
2. Shepard N (2012). A and P of Vestibular and Balance System: Overview and Highlights. From Vestibular Rehabilitation: A Competency-Based Course, Auckland.
3. Hall CD, et al (2017). Advanced Vestibular Rehabilitation Course, Auckland.

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## B8: Insightful decision making strategies: Empowering comprehensive (24hr) person-centred wheelchair & seating procurement

Rachael Schmidt, OT

### Learning objectives:

1. Enable decision making effectiveness through service transparency: a seven process service pathway;
2. Evaluate decision making efficiency: understand major factors that influence decision-making facilitation/engagement and disengagement;
3. Build trustworthy partnerships: strategy sharing to empower person-centred collaborative decision making;
4. Develop effective clinical reasoning strategies: through critical service effectiveness and intervention satisfaction

### Session description:

#### Introduction

Empowered person-centred 24hour posture-wheelchair-seating intervention for complex postural-mobility disability necessitates multiple stakeholders collaborations (i.e. clinicians, vendors/suppliers, consumers/care providers) (Arledge et al., 2011). Collaborative partnerships encourage effective information exchange that empowers person-directed decision making confidence (Gowran, 2012; Plummer, 2010).

#### Aim

The workshop provides essential strategies for empowering person-directed decision-making for complex wheelchair-seating procurement success. Method: Data extrapolated from two research activities informs workshop content. An in-depth case study into sixty Australians' experiences of complex wheelchair-seating service and procurement (Schmidt, 2015) is combined with an evidence-based literature critique pertaining to available complex 24 hour postural care and [wheelchair] seating intervention effectiveness (Family & Community

Services, 2016). Intervention effectiveness was graded using an Evidence Alert Traffic Light System (Novak et al., 2013).

#### Findings

Data show effective 24hr posture-wheelchair-seating procurement are influenced at three levels. At a service level, by access to primary and secondary services, at a service provision, by clinical/technical competence, at a consumer level, as defined by consumer capacity to engage.

Evidence-based intervention strategies enhance decision-making effectiveness. For example: at a service level, by enhancing service transparency that builds trustworthy partnerships. At service provider level, by developing confident clinical reasoning skill, to build collaborative stakeholder partnerships that empower knowledge sharing, informed decision-making and collaborative evaluation of intervention satisfaction. Finally, at a consumer level, through a thorough understanding of confluent factors that influence consumer engagement (or not).

Each level impacts on: how well decisions are made, how each affects stakeholder collaboration (or not) and how each can be used to engage/facilitate informed decision making. Understanding the confluence of factors at each level assists service providers empower person-centred decision-making process.

#### Conclusion

With workshop knowledge – participants, as service providers – can articulate evidence-based strategies to collaboratively facilitate and empower person-directed decision making - with relevant stakeholders – to advocate appropriate 24hr posture and wheelchair-seating solutions according to individual needs/aspirations.

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1. Arledge, S., Armstrong, W., Babinec, M., Dicianno, B. E., Digiovine, C., Dyson-Hudson, T., . . . Stogner, J. (2011). *The RESNA Wheelchair Service Provision Guide*. Practice Guideleines.
2. Family & Community Services. (2016). *24 hour Positioning (including Seating and Wheeled Mobility) Practice Guide V 1*. (AH16/7251). : NSW Government.

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3. Gowran, R. J. (2012). Building a Sustainable Wheelchair and Seating Provision Community-Meeting Peoples' Primary Needs Now and in the Future. In P. Encarnacao, L. ZAzvedo, G. J. Gelderblom, A. Newell, & N.-K. Mathiassen (Eds.), *Assistive Technology: From Research to Practice: AAATE 2013* (Vol. 33, pp. 290-297). Amsterdam: IOS Press.
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  5. Plummer, T. (2010). *Participatory Action Research to examine the current state of practice in wheelchair assessment and procurement process*. . (Doctor of Philosophy in occupational therapy ), Nova Southeastern University: , Fort Lauderdale Florida. (UMI Dissertation Publication Number: 3412178: ProQuest)
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## B9: Wheelchair and Seating Provision Queensland: Exploring the experiences of people using these essential services

Dimitra Solomon

Dr Michele Verdonck, PhD, OT

Dr Rosemary Joan Gowran, PhD, OT

### Learning objectives:

1. To highlight the complexity of wheelchair and seating provision systems in context.
2. To consider the impact ad hoc and delayed delivery systems have on people who rely on these services.
3. To engage the audience in reflection and consideration as to the implications this research has for their own practice.

### Session description:

#### Introduction

Providing wheelchair and seating is a complex intervention requiring seamless provision systems. Specialized skills are essential to enhance postural support and mobility to enable equal opportunity to engage in daily life as a basic human right. Every aspect of the provision process has an influence on overall outcomes for people who use wheelchairs. Consequently, it is important that the provision process, as defined by the World Health Organization (2008), is managed and structured in a way that provides 'an appropriate wheelchair' to meet the unique requirements of each individual. In Queensland, there are over twenty-eight thousand people who use wheelchairs. Funding streams vary and individuals are not automatically entitled to a wheelchair free of charge, which can lead to delays and compromises regarding appropriate prescription and choice.

#### Method

To understand the Queensland context, an on-line survey was conducted, engaging with non-governmental organizations to recruit participants. Ethical clearance was provided by the USC Human Research Ethics Committee approval no: S/17/1008. Results are analyzed using SPSS 20.

Results: Detailed results as to the experience and level of satisfaction of wheelchair service users will be presented; these include wheelchair users, their families and carers. Areas highlighted across the wheelchair and seating provision process will be discussed, encompassing access to services, assessment and delivery processes, funding streams, education and training and follow up relating to repairs, servicing and reviews.

### Conclusion

The importance of an appropriate wheelchair to meet individual needs is clear. Unpredictable provision will have an impact on the lives of those in receipt of services. Consideration should be given to creating a more streamlined and sustainable provision system where people can access what they require in a timely and appropriate way. It is unclear, how the introduction of the National disability insurance scheme (NDIS) will impact on the overall delivery system.

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