Transporting People with Disabilities

Rachel van Someren, RPEQ
Rehabilitation Engineer
RBWH

Queensland Government
Queensland Health
Scope

- Transport Options in Buses, Taxis & Cars
  - Five Sections:
    - Let’s Talk About Standards and Laws
    - Child Restraints and the Transport of Children with Disabilities
    - Transporting Adults with Disabilities
    - Wheelchair Transport
    - Case Studies & Questions
  - Sections 2 to 4 will include:
    - Discussion of Applicable Standards
    - Risk Assessment & Documentation
Section 1
Let’s Talk About Standards and Laws

• What are Standards?
• Standards and the Law.
• Useful Websites
What are Standards?

• Standards are:
  – Documents detailing minimum expectations of Safety, Quality and Performance.
  – Written with the input of many stakeholders & experts & reviewed regularly.
  – Guidelines to design.
  – Test procedures
  – Produced by a number of bodies throughout the world.

• Standards are not:
  – Best Practice (necessarily).
  – Law (necessarily).
Standards and the Law

• Not every Standard is Law.
• A Standard only becomes Law when mentioned in an Act of Parliament or other Legislative Instrument (such as regulations).
• Otherwise they provide guidelines to good practice.
• Examples of Standards (or parts thereof) which are Law are:
  – AS/NZS 2172:2003 : Cots for household use - Safety requirements
  – Australian Standard 1647.2-1992 Children’s Toys (Safety Requirements) Part 2: Constructional Requirements
• Standards which are not Law can still be used in Court as a test of adequate practice and Duty of Care.
Useful Websites

- http://www.standards.org.au
Section 2
Child Restraints and the Transport of Children with Disabilities

• Applicable Standards
• Child Restraints and the Law
• When might a ‘compliant’ child restraint be unsuitable?
• Performing a Risk Assessment & Developing a Solution (using AS/NZS 4370:1996)
Applicable Standards


• AS/NZS 4370:1996 Restraint of children with disabilities in motor vehicles. Note: This standard is currently being reviewed.
Child Restraints and the Law

- **Babies** and Children up to the age of 7 must be secured in an approved child restraint.
- **Approved** means meeting AS/NZS 1754:2010.
- **Type** depends on age and size.
  - **Babies** aged 0 to 6/12 rearward facing baby capsule or infant restraint
  - **Babies and children** between 6/12 and 4yo either rearward facing child restraint or forward facing child restraint with built-in harness
  - **Children** 4 – 7yo booster seat with a H-harness or a booster seat with a secured adult lap/sash seatbelt.
  - The rules recognise that some children may be too large or small for the recommended restraint type.
  - It is recommended to keep smaller children in the earlier age type restraint as long as possible.
Child Restraints and the Law (2)

• Exemptions
  – taxis and limousines where no child restraint is supplied
  – on medical grounds where a certificate is provided by a doctor.
    • The medical certificate must have an end date no later than 12 months from the date it was given
  – Source: Queensland Govt - Transport and Main Roads
When might a ‘standard’ child restraint be unsuitable?

- A child is above the size and/or weight limits for the restraint.
- The correctly sized restraint does not provide sufficient postural support.
- The child has a condition that prevents them from being safely positioned in the restraint (eg Pierre Robin syndrome).
- Behavioural issues.
- Etc.
Performing a Risk Assessment & Developing a Solution

• Before you start.
  – Are you sure that a standard child restraint is not suitable? There are lots of different models out there so have a look at, and try, as many as possible.
    • Scope: “This Standard sets out options for restraining a child with one or more disabilities while travelling in a motor vehicle, to minimize the risk of bodily injury in an impact”.
AS/NZS 4370 – Content

• Definition of Terms
• General Guidelines for the Prescriber
• Restraining Devices and Ancillary Equipment incl:
  – Modifying a Child Restraint
  – Special Purpose Child Restraints
• Specific Disabilities and Recommended Restraint Options incl:
  – Bilateral Lower Limb Plasters
  – Movement Disorders (eg Cerebral Palsy)
  – Behavioural Disorders
• Background and Recommendations
• Buses and Vans

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Using AS/NZS 4370

- The Standard provides advice on the safest options for restraining a child.
- Use the Recommended Restraint Options to step you through the decision making process.
- Use the advice on Restraining Devices to guide any modifications.
- Use the General Guidelines for the Prescriber as a check list for advice and documentation.
Summary

• If at all possible use an Australian Standards Approved Child Restraint.
• Make as few changes as possible.
• Document any deviation from the ‘norm’ and the reasons for it.
• Ensure the client has a medical certificate detailing their need for a modified transport system & that they know to carry it at all times while using that system.
• Ensure that the client / carers know that the system is solely for the use of the child for whom it was designed.
Section 3
Transporting Adults with Disabilities

- Applicable Standards
- Seatbelt Laws
- When might an Approved Motor Vehicle Restraint be unsuitable?
- Performing a Risk Assessment & Developing a Solution (using AS/NZS 4370:1996)
Applicable Standards

- AS/NZS 4370:1996 Restraint of children with disabilities in motor vehicles. Note: This standard is currently being reviewed.
Seat Belts and the Law

• Everyone in a vehicle must wear a fastened seatbelt at all times.

• Relevant Exemptions
  – on medical grounds where a certificate is provided by a doctor.
    • The medical certificate must have an end date no later than 12 months from the date it was given

• Source: Queensland Govt - Transport and Main Roads
When might an Approved Motor Vehicle Restraint be unsuitable?

- The correctly sized restraint does not provide sufficient postural support.
- The person has a condition that prevents them from being safely positioned in the restraint (e.g., Pierre Robin syndrome).
- Behavioural issues.
- Other.
Performing a Risk Assessment & Developing a Solution

• Before you start.
  – Are you sure that a standard restraint is not suitable?
  – Perhaps it is access & egress that is the issue, or the style of seat, not the restraint that is the problem.
    • Scope: “This Standard sets out options for restraining a child with one or more disabilities while travelling in a motor vehicle, to minimize the risk of bodily injury in an impact”.

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Where the ‘Restraint’ is not the issue

• Perhaps it is just getting into & out of the vehicle that is the problem. Consider;
  – Rotating pads on the seat
  – A vehicle mounted hoist & sling system
  – A platform hoist
  – A portable step
  – A vehicle with a different door design.
  – An alternative vehicle seat.
Using AS/NZS 4370 for Adults

• The Standard provides advice on the safest options for restraining a child, but there is no equivalent standard for adults.
• Much of the advice, and certainly the process in this standard can be applied to adults with a disability.
• Use the Recommended Restraint Options to step you through the decision making process – skipping through the options that are obviously not suitable due to the client’s size or weight.
• Use the advice on Restraining Devices to guide any modifications.
• Don’t forget the possibility of installing a different seat.
• Use the General Guidelines for the Prescriber as a check list for advice and documentation.
Summary

• If at all possible use an Approved Motor Vehicle Restraint.
• Make as few changes as possible.
• Document any deviation from the ‘norm’ and the reasons for it.
• Ensure the client has a medical certificate detailing their need for a modified transport system & that they know to carry it at all times while using that system.
• Ensure that the client / carers know that the system is solely for the use of the person for whom it was designed.
Section 4
Wheelchair Transport

- Applicable Standards.
- Which chair?
- Performing a Risk Assessment & Developing a Solution
Applicable Standards

- AS/NZS 10542.1:2009 Technical systems and aids for disabled or handicapped persons - Wheelchair tiedown and occupant-restraint systems – Part 1: Requirements and test methods for all systems
- AS/NZS 10542.2:2009 Technical systems and aids for disabled or handicapped persons - Wheelchair tiedown and occupant-restraint systems – Part 2: Four-point strap-type tiedown systems.
- AS/NZS 4370:1996 Restraint of children with disabilities in motor vehicles – especially Appendix B “Buses and vans suitable for the transport of children with disabilities” – Note: some of the information is now out of date due to changes to other standards and regulations.
Choosing to travel in a wheelchair.

- The foreword of AS 2942:1994 (superseded) says “…the safety of passengers is best assured by the use of normal passenger seats and seat belts.” To this we can add ‘or child restraints which comply with AS/NZS 1754’ (paraphrased from AS/NZS 4370:1996).

- But what if this isn’t possible and the person has to travel in their wheelchair? Then…. 
• "Effective restraint for people occupying wheelchairs requires the wheelchair to be secured in the transporting vehicle, with the occupant restrained by a seat belt which itself is secured directly to the vehicle or to parts which are themselves secured to the vehicle."
  Foreword AS 2942-1994 (superseded)

• Wheelchair-tiedown and occupant-restraint system (WTORS) – "complete restraint system for wheelchair-seated occupants comprised of equipment for wheelchair tiedown and a belt-type occupant restraint”  Clause 3.35 of AS/NZS 10542.1:2009
In translation:

- The wheelchair needs to be tied down to the vehicle.
- The person’s restraint needs to be separately secured to the vehicle.
- The person and the wheelchair cannot be secured as one unit (or the person may be crushed between their chair and the restraints, or the restraints may break due to excessive load).

Note Also:
- Postural restraints are not transport restraints.
- Wheelchairs for use in vehicles do not need to have specific ‘vehicle tie downs’ but (usually 4) solid points on the frame (two front, two back) to which the restraints can be attached.
- The Occupant restraint must have both pelvic and upper torso belts.
Choosing a wheelchair
(AS/NZS 3696.19:2009 Appendix ZA Selection of Mobility Appliances to be used in Motor Vehicles).

- Scooters are generally unacceptable.
- 4 points of the frame which are accessible for connection of the wheelchair restraint, 2 front and 2 rear (fairing can be a problem here).
- Restraint assembly should not be routed around footrest assemblies, armrest assemblies or wheelchair wheels.
- A backrest that reaches shoulder height.
- Other recommendations based on the old (AS 2942:1944) standard
  - Metal frame to which the wheels and upholstery are connected.
  - 4 wheels
  - Batteries below seat height.
What to avoid (from AS2942:1994, superseded)
Risk Assessment – the basic questions.

• Can the user transfer and safely use a standard vehicle seat (with or without modifications)?
• What postural support does the client need to maintain a safe airway?
• What postural support does the client need to remain comfortable (including preventing pressure sores)?
• Does the client use a headrest? If not, one should be provided for transport use.
• Is the risk to the client of changing an element of their postural support system to meet transport guidelines greater or lesser than maintaining it?
• Can I make the postural support system safer for travel while maintaining the level of function?
FAQs

• Should trays be removed for transport?
  – Generally yes but if they are required for the client to maintain safe posture then – consider a foam travel tray.

• If removed, how should they be stored?
  – “…so that it does not break free and cause injury to vehicle occupants in the event of a collision”. (AS/NZS 3696.19:2009 Clause 6.3.4(e))

• What about buggies?
  – Don’t use for vehicle transport.
  – Some of the more expensive specialist disability prams/buggies do have wheelchair tie downs fitted. And some have been tested overseas – but not always independently. Usually children that fit in these can be transferred into car seats.
FAQs 2

• Can people be transported in Tilt?
  – In general it is not recommended but again it is a matter of degrees – which is the greater risk to the client? Eg if they aspirate when not in tilt – then they should travel in tilt. But have a look at the tilt mechanism and get advice on which might be the strongest, or if there is a way it can be ‘locked’ for transport.

• What about recline?
  – AS/NZS 3696.19:2009 Clauses ZA2 (g) & (h) recommend back angle no more than 30deg to vertical and seat at greater than 0deg to horizontal, but recognise that this may not be practical.
  – In terms of travelling in recline –TIS is preferable as there is greater tendency for submarining in recline.
FAQs 3

• Is a headrest required?
  – No, but it is recommended (AS/NZS 3696.19:2009 Clause 4.2.3)
  – But in the case of wheelchair restraint assemblies (as opposed to the wheelchair itself) (AS/NZS 3696.19:2009 Clause 4.2.5 – found in Appendix ZZ)
    • rearward facing installations (such as in buses) a backrest & headrest shall be included.
    • forward facing installations they may be supplied.
Conclusion

• Assess the risks from various injury sources.
• Minimise the risks.
• Document any deviation from the ‘norm’ and the reasons for it.
• Ensure the client has a medical certificate detailing their need for a modified transport system & that they know to carry it at all times while using that system.
• Ensure that the client / carers know that the system is solely for the use of the person for whom it was designed.
Questions?
Case Studies.

1. Child with ABI, <7yo, >18kg.
2. Child with ABI, 6yo, in long leg plaster.
4. Child with poor head control.
5. Teenage child with ABI, high support needs.
6. 6yo with bilateral hip dislocations, in hip brace.
Case Study 1

- Severe hypoxic brain injury.
- Child <7yo – requires child restraint.
- Child >18kg – can’t use built in 5-point harness.
- Child requires torso and head support.
- Family ineligible for any govt support – funds limited.
- Prior to injury child was using family owned high backed booster seat with top tether & lap-sash seatbelt.

- Family owned booster provided adequate lateral support, but no frontal torso support.
- Considered an H-Harness but booster did not have an anti-submarining strap – so risk of sliding down and asphyxiating.
- Initially recommended purchase of similar new booster with anti-submarine strap.
- Noticed holes for anti-submarine strap in booster structure, but not in cover.
- Contacted manufacturer who checked Standards testing records and found booster had been tested with & without strap. Marketed without strap to meet price point.
- Manufacturer provided anti-submarine strap for fitting to family’s booster.
- Final solution – original booster with anti-submarine strap and H-Harness properly fitted.
- Note: No requirement for Doctor’s letter as solution meets Australian Standards.
Case Study 2

- Hypoxic ABI, spastic quad with athetoid movements.
- Child 5yo – requires child restraint.
- Child likely to be discharged home in long leg plaster.

- Child was adequately supported in her own child restraint – aside from plastered leg.
- Adequate room between child restraint & front seats of car for leg to be supported horizontally.
- Manufactured leg board to fit to car seat underneath restraint.
- Technically no modification to child restraint – but Doctor’s letter supplied for clarity.
- Note: The child was discharged to another hospital before I was able to fit this device. The receiving hospital was informed that child could not be discharged home with leg in plaster without first having this system fitted and demonstrated.
Case Study 3

- Child has athetoid CP & behavioural issues.
- 7yo and >26kg, too heavy for booster seat.
- Undoes or slides under lap-sash seatbelt.
- Working with Doctor & family via email & ‘phone. Advice provided remotely w/o physical exam.

- Prescribed EZ-On Vest with rear zip and top tether strap. – provides upper body support and prevents submarining. Able to be fitted prior to getting into car. Child cannot remove himself.
- Also prescribed Seat Belt Buckle guard as child would still undo the lap belt.
- Doctor’s letter required prior to purchase of Buckle Guard, and to be carried in vehicle when restraint in use.
- Extra anchoring system to be purchased if restraint to be used in school bus.
Case Study 4

- ‘Floppy’ child, poor head control could result in breathing difficulties.
- >12kg and long but <18kg so no longer rear facing but able to use built in 5-point harness. Prior to changes in child restraint laws.
- Child restraint had capacity built in for some tilt in forward facing – but insufficient for head support needs. Otherwise suitable.

- Constructed FOP wedge which fitted and attached to the car seat. Ply slid between backrest and seat to be held firmly in place.
- This modified the slope of the car seat, placing the child restraint into a greater degree of tilt and resulting in good head support.
- No modifications were made to the child restraint, but a Doctor’s letter was still supplied as this is still considered a ‘use modification’ – reclining the restraint further than designed for by the manufacturer.
Case Study 5

- Child fully dependant for all cares.
- High physical support needs, including head.
- Fully customised seating in wheelchair.
- Problems dealing with secretions.
- Poor cough reflex.
- 15yo & tall & ?>50kg.
- Large family with little disposable income.

- Considered specialised vehicle restraints. Felt best option was Trec Supporter – but child’s head above top of seat back & no headrest available. Also specialised headrest with significant lateral support would be required.
- Also issues of how to get child into car.
- Due to high support and positioning needs transport in wheelchair was the best option.
- Assistance was provided by RCH QPRS to source funds for 2\textsuperscript{nd} hand accessible vehicle.
Case Study 6

- Child with bilateral acute hip dislocation.
- Placed in bilateral hip brace for 23/24 for 6/52.
- 6yo, >18kg, <26kg and height still suitable for booster seat.
- Family own booster seat and backless booster cushion.
- Booster seat might work for abducted legs due to low sides – but hip angle >90 – insufficient seat length.
- Recommended use of booster cushion as this could be slid forward on car seat to allow for hip angle (ie increase apparent seat depth).
- Provided firm foam wedges to support spine (fill in gap between child and car backrest).
- Lap-sash seatbelt.
- Leg supported by pillows or similar in footwell.
- Minimise car travel to essential outings.
- Doctor’s letter provided, family to take to GP for signing (as the doctor who saw them in hospital was not available late in the day).
- Note: Booster cushions have been removed from the standard but are still legal to use.
Sample Drs Letter

• A sample doctors letter has been provided.