Australian Paediatric Surveillance Unit
STUDY PROTOCOL

Serious Seatbelt Injuries

COMMENCING January 2006

BACKGROUND

The use of adult seatbelts and in particular lap-only belts in young children has been associated with significant injuries in motor vehicle accidents (MVAs) (1). Children restrained by a lap-only belt, or young or small children restrained by a lap-sash belt are more likely than those in recommended child restraints, to suffer a specific cluster of injuries referred to as the **lap-belt syndrome** including tears and perforations to the intestine and its mesentery, injuries to abdominal organs such as liver, pancreas, kidneys, and spleen and fractures, distraction or dislocation of the mid-lumbar spine and spinal cord injuries (1,2). This is observed mainly in young or small children whose iliac crests are not well developed and the lap portion of the belt sits on the abdomen rather than on the iliac crests (3,4). More recently, reports of serious neck and cervical spine injuries due to the sash portion of adult lap-sash belts have also been described (5,6).

Lap belt syndrome injuries are rare. However, they often require complicated surgery, long hospitalisation and rehabilitation and may leave some children permanently disabled resulting in significant impact on families, health resources and the community (7,8). Newman et al. reported an incidence of 25% of paraplegia among patients with lumbar spine fractures in lap-belt syndrome (5). These injuries are preventable through the correct use of child restraints, booster seats and seatbelts (7,9).

The use of restraints among Australian children is very high (around 98%) (10). However, preliminary reports from NSW and from overseas suggest that the majority of children aged 2-8 years who are injured in MVAs were wearing adult seatbelts rather than the recommended booster seat combined with a lap-sash belt or harness (8,3,12). Preliminary observations from a study conducted by one of our collaborators from the Prince of Wales Medical Research Institute, suggests that only about 20% of injured children were using optimal restraints for their age and size (3).

CASE DEFINITION

Report any child aged 12 or under, restrained in a motor vehicle at the time of a crash in either:

- Approved child restraint
- Booster seat combined with adult lap-sash belt
- Booster seat combined with lap-only belt
- Adult lap-sash belt only
- Adult lap-only belt

AND presenting with either (1) abdominal injuries or (2) thoraco-lumbar spine injuries or (3) cervical spine injuries

1. An abdominal injury, as determined by operation, ultrasound or abdominal CT scan and involving any of the following:	**2.Thoraco-lumbar spine injuries (including the following):**	**3. Cervical spine injuries**
• small intestine • colon • spleen • kidney • liver • pancreas • mesentery • bladder • uterus • any vascular structure within the abdominal cavity *See attached for abdominal injury severity grading.	***Major spinal injuries*:** • vertebral compression fractures • vertebral burst fractures • vertebral fracture dislocations • contusions, bruising or soft tissue injury at site of seatbelt ***Minor spinal injuries*:** • fracture of transverse process of vertebra • fracture of articular process of vertebra • spinous process fractures of vertebra • pars interarticularis fractures of vertebra	• Cervical spine fractures • Dislocations • Cord injury

STUDY OBJECTIVES

- Determine the extent of lap-belt syndrome type injuries among Australian children aged 12 or under
- Determine the type and severity of injuries sustained by Australian children aged 12 or under, while wearing adult seatbelts
- Identify age groups and demographics of children at most risk
- Document outcomes for children injured in MVAs when restrained by an adult seatbelt

FOLLOW-UP OF REPORTED CASES

A brief questionnaire requesting further details will be forwarded to clinicians that report a case of seat belt injury to the APSU.

INVESTIGATOR CONTACT DETAILS (*Principal Investigator and contact person)

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