

Off Road Vehicles Symposium - Report

On Friday 13th December 2013, The Children's Hospital at Westmead held a symposium to discuss the current issues, trends and possible solutions with child injuries sustained from off road vehicles.

The attendees are listed in Appendix A and the program is listed in Appendix B.

Summary of content presented

All-terrain vehicles (ATVs) are 2-, 3- & 4-wheeled motorcycles with the 4-wheeled classified as quad-bike off road vehicles. They are designed with low pressure tyres & handle bars for steering for use by single operators and improved later for one passenger (Tandem ATVs). ATVs are rider active vehicles that require the user to shift their body weight whilst riding the vehicle.

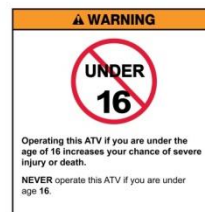
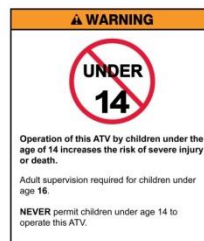
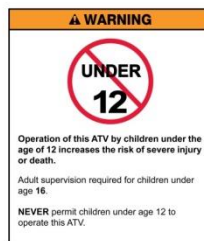
ATVs are used in farms, rural areas & rough terrain and have recently become popular as recreational vehicles. They range from 50cc to 1000cc at a cost of \$400-\$10,000. ATVs are street legal in some countries but illegal in most Australian states, US & Canada.

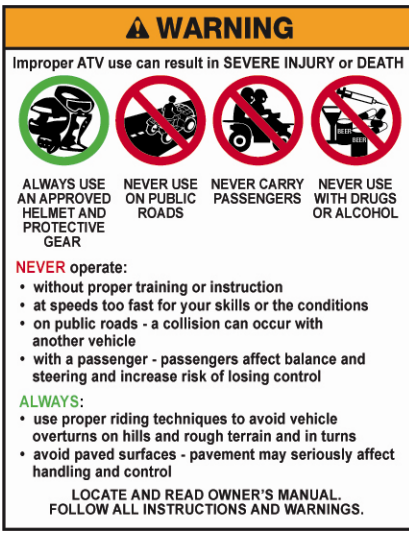
ATVs were first introduced in 1970 in USA for farm use only. They became increasingly popular for recreational activity and were downsized for adolescents and younger children by manufacturers due to popularity. This resulted in increased ED presentations and several deaths in children <15. The Aust. Acad. of Paediatrics recommended children <16yrs not allowed to drive these vehicles and no passengers. Unfortunately few rules & regulations are available governing ATV vehicle use.

Contributing factors to injury include:

- Falls, thrown from vehicle on losing control
- Roll overs, riders pinned for hours till help arrived
- Impact with stationary objects- wall, fence, trees, poles
- Poor judgement & risk taking behaviour
- Driving uphill, vehicle tipping backwards at low speed
- Helmets & or protective gear not worn
- Children as passengers pulling at throttle or handle bars
- Recreational vehicle used at high speed
- Drivers with little or no training

There are no standards in Australia for the import or use of ATVs. FCAI (Federal Chamber of Automotive Industries) Members (the peak body for the Automotive Industry in Australia) have voluntarily adopted the USA ANSI/SVIA – 1 2010 Standard which is mandatory in America. This standard requires the vehicles to carry a prominent, relevant age warning:

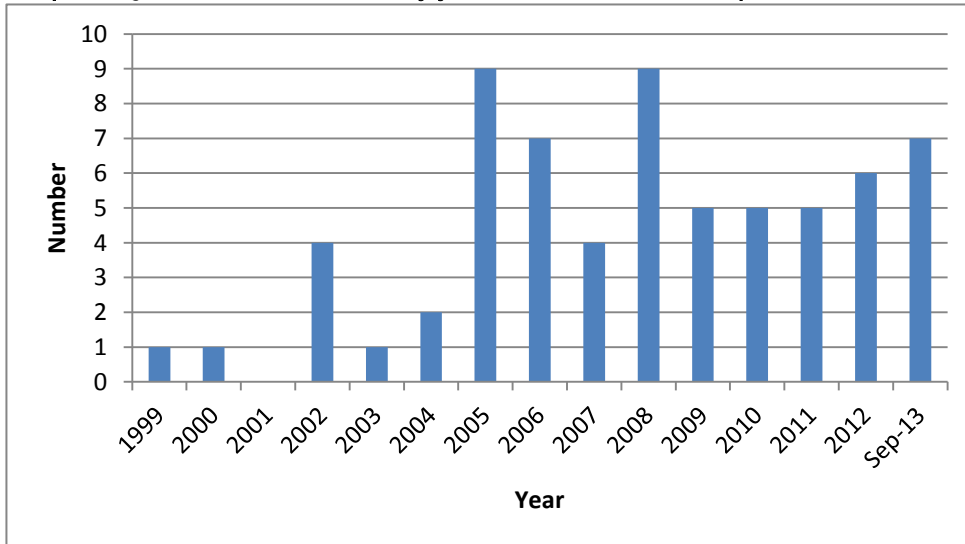




CHW Data

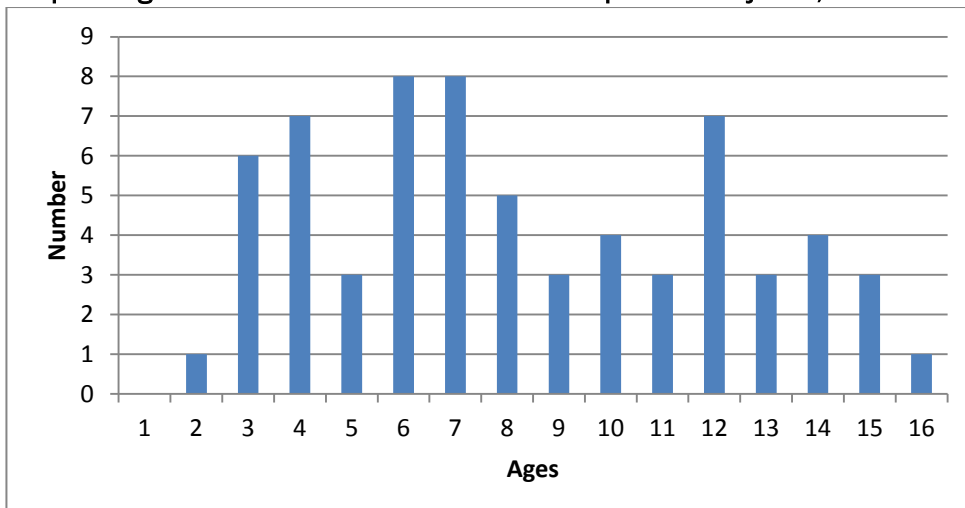
Between 1996 and Sept 2013, there were 66 admissions to CHW as a result of injuries sustained from quad bikes, of which 42 were male and 24 were female (see Graph 1). No admissions occurred in 1996 or 1997.

Graph 1: Quad bike admissions by year at CHW, 1996 – Sept 2013

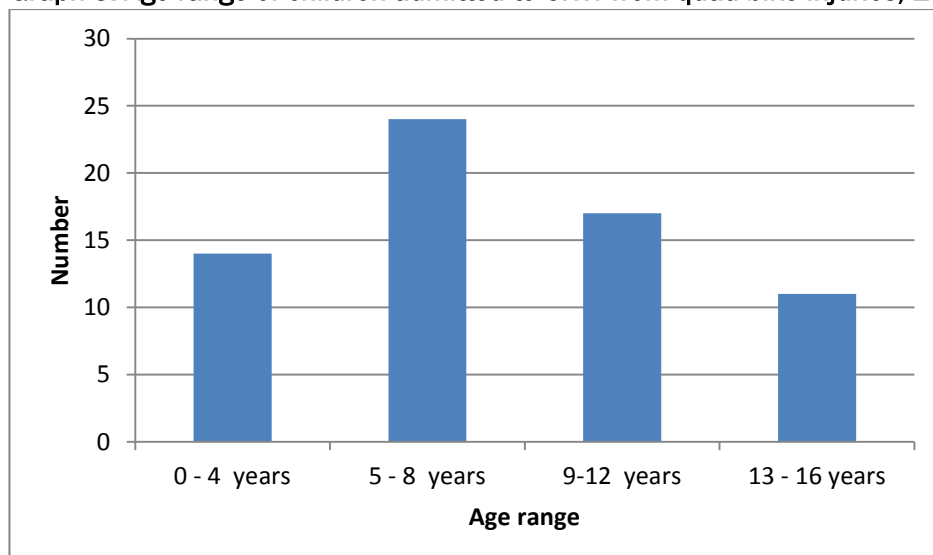


The age of the children who were admitted is evident in Graphs 2 and 3. There was a peak at age six and seven and then at four and 12 years of age (average 8 years).

Graph 2: Age of children admitted to CHW from quad bike injuries, 1996 – Sept 2013



Graph 3: Age range of children admitted to CHW from quad bike injuries, 1996 – Sept 2013



In total, there were seven ICU admissions. The majority of cases had an ISS of <9 (65.2%), followed by ISS 9-12 (18.2%), ISS 13-14 (9.1%) and ISS>15 (7.6%).

There was a correlation between helmet use and related health injury with 21 children not wearing a helmet, 20 with a helmet and 25 unknown. The children sustained their injuries on a road/dirt track (28), farm/property (18) or home (13) with 1 not documented. The majority of incidents were local (46), compared to rural (20).

NSW Child Death Review Team Data

From 2003-2012, there were 25 deaths from ATVs in NSW, including 13 motorcycles, 6 quad bikes, 4 side by side vehicles and 1 go kart. Quad bikes are currently the leading cause of death and serious injury on Australian farms.

Of the six quad bike deaths,

- Two children were driving at the time of the fatality (13 years and 16 years), one of which was carrying multiple passengers. The remaining four children were passengers on the quad bike, 3 of which were being driven by other children WITH PARENTAL PERMISSION and one was being driven by a parent.
- Only one child *did not* have adult supervision.
- All of the children were on or around rural properties
- Five (83.3%) were riding for recreation purposes
- Three children were passengers on a quad bike which rolled over (50%), two were a single vehicle incident and one was hit by a car
- Two children were wearing a helmet, two children were not wearing a helmet and two unknown. The type of helmet used is unknown
- Most cases had two or more of the following risk factors
 - o Uneven or bumpy ground
 - o Slopes, steep inclines
 - o Low skill/experience of driver
 - o Under 16 years old
 - o Having a passenger
 - o Overload of the vehicle
 - o No helmet
 - o Riding alone, delayed access to emergency services
 - o Excessive speed
 - o Alcohol or drug consumption

Other information

According to the US CPSC, over the past three decades, at least 2,775 children <16 years died from ATV-related incidents. In 2009, Coroner John Olle said “Quad bikes are prone to rollover”. According to the CPSC, children <16 years driving a youth model <90cc reduced the risk of injury by only 18% compared to the use of an adult sized model >200cc.

There were 183 deaths nationally of which 26 (14.2%) were <16 years and 80% (21 cases) of these occurred on farms. Of the 26 deaths among children <16 years; 11 were among children 0-5 years (46% driver) and 15 were among children 11-15 years (67% driver). Of the 11 children who were not wearing a helmet, seven died as a result of head injuries. 21 children were on adult sized quad bikes and 5 were on child sized quad bikes, of which all were wearing helmets and were crushed/asphyxiated under the quad bike.

Summary of issues

- Adult sized quad bikes are not designed to be driven by any child under the age of 16
- The safety of child sized quad bikes is unknown
- Quad bikes prone to tipping and rolling when moving at speed or up hills
- Lack of usage of helmets
- Children as passengers on ATVs
- Adults allowing their children to drive/ride on adult sized ATVs

Results of the open discussion session

A number of suggestions/recommendations were made to address quad bike related injuries among children. These include:

- Data collection
 - o Type of vehicle, cc of vehicle, standard approved vehicle, brand of vehicle
- Education and awareness campaigns
 - o Children should not drive or be passengers on adult sized ATVs
 - o Recommendation to use two-wheelers instead?
 - o Should children be allowed to ride age appropriate ATVs?
- Legislation
 - o Mandatory standard for quad bikes
 - o Inclusion of mandatory warning labels
- Notification of off-road incidents requiring investigations by police (mandatory reporting) based on ISS score and death
- Safety assessment of child sized ATVs (whose responsibility?)
 - o Scientific method to ensure safety? (ACCC)
- Engineering controls
 - o Crush protection
 - o Roll over protection
 - o Weight sensors
 - o Child proof ignition safety locks
 - o 3 points of contact to start
- Administrative controls
 - o Licencing registration
 - o Driver training
 - o Mandatory protective equipment
 - o Rules re passengers, age etc.
- Sales information on number of products sold, different types, brands, where sold (Sydney/rural) etc.
 - o FCIA and imported products
- Research on the knowledge and behavioural aspects of parents
 - o Survey regarding practices around bad behaviour
- Insurance of vehicles, difficult considering they are based on a farm but can be explored

There was also discussion on prosecutions for manslaughter or grievous bodily harm if it is proven that an adult allowed their children to drive/ride on a quad bike.

Appendix A: Attendance list

Name	Area
Shruti Shejale	Ortho
Vicki Conters	Trauma (WNSWLHD)
Vicki Milne	Kidsafe
Christine Erskine	Kidsafe
Julie Brown	Neuroscience Australia
Cameron Cuthill	Federal Chamber of Automotive Industries (FCAI)
Erin Simmonds	Kids Health, CHW
Frank Ross	CHW Trauma CNC
Kay Best	CHW Trauma CNC
Soundeppan	Surgery / Trauma CHW

Appendix B: Off road vehicle symposium program

Quad bike Injuries in Children: What can be done?

Where: Lorimer Dodds Lecture Theatre
The Children's Hospital, Westmead

When: Friday 13th December

Draft Program

0830: Registration

0900: Introduction & Welcome- Prof. Danny Cass (CHW)

0905: CHW Data

0920: ITIM Data

0935: Coroners Data- Susan Adams (SCH)

0945: Farmsafe, the rural perspective – Assoc. Prof. Tony Lower

1000: Manufacturers- data on safety in children – Cameron Cuthill (FCAI)

1030: Morning Tea

1100: Open discussion session

1200: Thank you & close- Prof. Danny Cass