

ATV and Lawnmower Injuries

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Summary

ATVs

- ◆ 12 Queenslanders have died in the last 12 years while riding an ATV on a farm.
- ◆ ATVs are now the number one cause of death on Australian farms;
- ◆ 40% of ATV injuries involve children under 15 despite manufacturers not recommending their use by children under 16;
- ◆ A quarter of ATV injuries result in a hospital admission;
- ◆ 40% of ATV injuries occurred on farms.

Lawnmowers

- ◆ Almost one in ten lawnmower injuries involved children under 5;
- ◆ Open wounds to the hand were the most frequent injury;
- ◆ A fifth of injuries were the result of an object being ejected by the mower;
- ◆ Burns were the most frequent injury involving under 5s.
- ◆ 12% of injuries involved ride-on mowers;
- ◆ A third of ride-on mower injuries involved children under 15 and 15% under 5s;
- ◆ 40% of ride-on mower injuries result in a hospital admission;



ATV Injuries

All terrain vehicles (ATVs), also known as "Quad" bikes or "four-wheelers" are emerging as a significant cause of serious injury or death in Queensland, particularly in rural communities.

The ATV has become increasingly popular on Australian farms as a flexible and economical farm workhorse, with 14,000 being sold in 2002 alone, up 12% from 2001¹.

ATVs are three- or four-wheeled motorised vehicles designed primarily for off-road use. They were originally designed in Japan as farming vehicles but have evolved into multi-purpose work and recreational vehicles widely used in a range of industries. All ATVs now sold have four wheels.

ATVs are not risk free. In the last 12 years at least 12 Queenslanders have died while riding an ATV on a farm¹. In the last 2 years there have been 20 deaths in Australia (excluding Queensland)². Three of the Queensland deaths involved three-wheeled ATV rollovers. The remaining quad bike deaths occurred as follows:

- three flipped over backwards
- three involved loss of control on rough or muddy ground
- two involved excessive speed
- one involved a collision through recreational use by a minor at a workplace³.

In Victoria the ATV is now the number one cause of farm deaths, overtaking the tractor⁴. During 2003, two children

in Australia under 5 died while riding on an ATV. In the US the number of ATV related injuries have more than doubled between 1997 and 2002, despite the number of ATV riders having increased by only 36%⁵. In New Zealand it is the leading cause of farm injury death⁶.

All ATV related injuries were identified from the QISU database by searching the text description field.

Results

During the period 1998-2002 110 ATV related injuries presented to QISU participating hospital Emergency Departments (EDs) in Queensland.

Age and gender

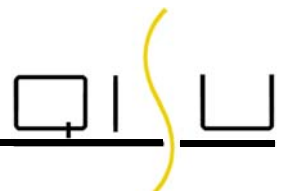
Almost 40% of ATV presentations involved children aged under 15. Up to age 15, there were almost equal numbers of males and females, however from age 15 injuries involve mostly males. The peak ages are 5 to 19.

Nature of injury

The most frequent injury is a fracture or dislocation (26%) followed by superficial injury (24%) and sprain or strain (24%).

Body part injured

The lower limbs are the part of body most often injured (34%) with the injuries usually involving the foot, lower leg or knee. Upper limbs were involved in 28% of injuries, most frequently the hand, wrist or shoulder.





Injury Severity

Nearly a quarter of ATV injuries resulted in a hospital admission and a third had a triage category of urgent or higher.

Activity

More than 40% of the injuries were reported to have occurred while participating in sport or leisure activities. Only 10%

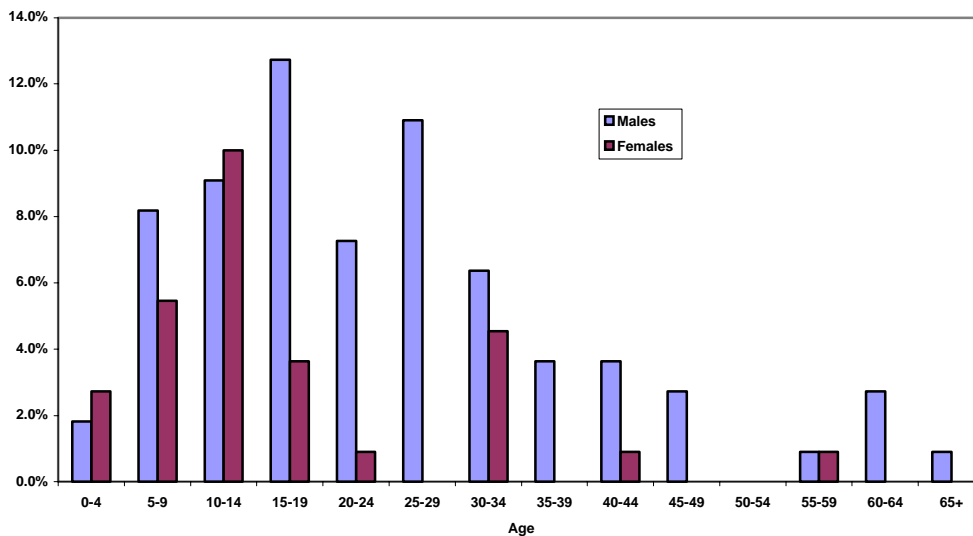


Figure 1 QISU Emergency Department presentations, ATV injuries by age and gender, 1998-2002

were reported as being work related, with 8% farm work related.

Location

By far the largest percentage of ATV injuries occurred on farms (40%) followed by roadway (21%). Ten per cent were described as having occurred in bush, remote or undeveloped place.

Discussion

Almost 45% of ATV injuries involved children under 16 years, which is higher than that found in the US, where 33% were aged under 16 years. The under 16, particularly 10-15 age group is of particular concern as they make up the biggest

group of injured riders despite the fact that manufacturers of adult sized ATVs recommend that children under 16 not be permitted to operate these machines.

Clearly these recommendations are being ignored.

Children are at particular risk because ATVs require the rider to use *active* riding techniques. *Active* riding involves the rider shifting his weight to assist in controlling the ATV. Children do not have the body size, weight, perception and coordination skills to actively ride an adult size ATV.

As mentioned earlier, ATVs are now the biggest killer on Australian farms, but they are also emerging as the main cause of machinery related injury amongst farm children. In Alberta during 1990-97, ATVs were the most common farm machines reported as being related to a hospitalised injury in children⁷. The Alberta study is the first study reporting ATVs being related to more farm machinery injuries than tractors. ATV manufacturers recommend that these vehicles not be operated on roads as they are difficult to control on paved surfaces, however around a fifth of the injuries in this study occurred on a roadway.

Lawnmower injuries

The rotary lawnmower is an item of machinery found in most backyards in Queensland. However, it is also has the potential to inflict serious injury, not only to the operator but to bystanders. A fifth of lawnmower injuries involve children under 15, while more than a third of these child mower injuries are to children under 5. Not all injuries are the result of blade

contact. Burns and projectile injuries are common, as are run-overs and falls from ride-on mowers.

In the US the Consumer Product Safety Commission (CPSC) reduced walk behind mower injuries from 41,900 in 1983 to 25,800 in 1989 by introducing a standard requiring the blade to stop within 3sec of operator leaving the operating position⁸.

Ride-on lawn mowers, which are now becoming more popular in Queensland, by virtue of their larger size and more powerful cutting blades have the potential to cause much more traumatic injuries. In the US there are 19 500 injuries and 75 deaths annually associated with ride-on mowers. A quarter of these injuries and 30% of the deaths occurred in children under 15 years, often when the children were operating the mower.

Results

During the period 1998-2002 541 mower related injuries presented to participating hospital EDs in Queensland. Injuries associated with ride-on mowers were identified in 65 cases (12%) with the remainder (476) being associated with walk-behind mowers.

Walk-behind mowers

Age and gender

With the exception of children aged under 5, most mower injuries involve adult males aged 20 years and over. Almost 80% of mower injuries involve adults aged 20 and over, and males outnumber females 3:1. Of particular concern is the 8% of injuries involving children under 5.

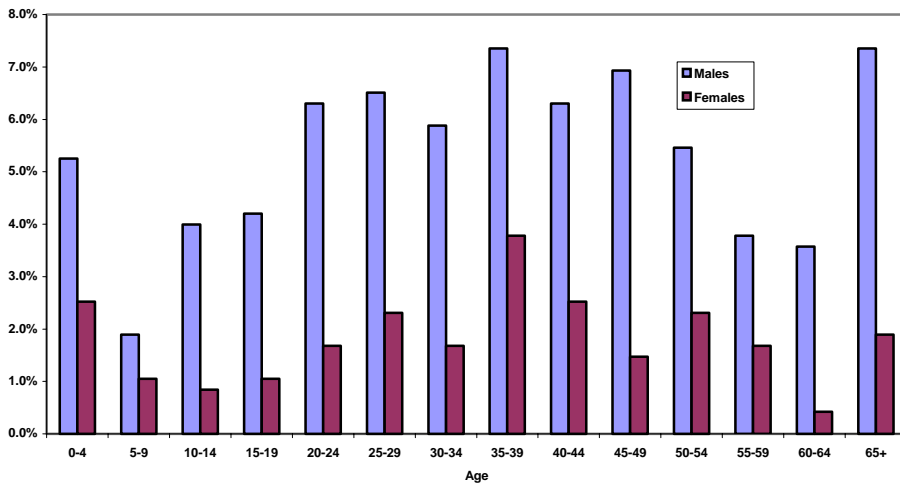


Figure 2 QISU Emergency Department presentations, lawnmower injuries by age and gender, 1998-2002

Nature of injury

By far the most common mower injury was an open wound (38%) followed by foreign body in the eye (12%), sprain or strain (10%), burn (8%) and fracture or dislocation (7%). Three per cent of cases involved a traumatic amputation.

Body part

Not surprisingly the hand was the most frequent part of the body injured (29%) followed by the eye (19%) and foot (15%).

A fifth of these injuries were the result of being struck by objects ejected by the mower blade most often rocks or stones.

Injury Severity

Fourteen per cent of mower injuries resulted in an admission to hospital and 33% had a triage category of urgent or above.

Under 5s

Burns were the most common injury involving mowers for children age under 5 (54%) followed by open wounds (16%). These were almost always the result of touching the hot muffler/exhaust of the mower.

Ride-on mowers

Of the 541 mower injuries there were 65 (12%) ride-on mower related injuries. Ride on mowers have the potential by virtue of their larger size and power to inflict much more severe injuries than smaller walk behind mowers.

Ride on mower injuries compared to other mower injuries involved a disproportionately higher percentage of children (32% vs 18%) and a disturbingly high percentage of children under 5 (15%).

As with other mowers the most frequent injury sustained was an open wound (35%), followed by fractures and dislocations (17%), sprain or strain (9%), burn (9%) and traumatic amputation (8%).

In contrast to other mowers the most frequent body part injured was the foot (29%) with only 13% of injuries involving the hand.

Due to the nature of the injuries suffered, the percentage admitted to hospital was higher (38%) and the percentage with a triage category of urgent or above (49%).

Amongst the 10 ride on mower injuries involving children under 5, 2 involved a traumatic amputation, 2 a fracture, 3 an open wound, 1 a crush injury and 1 a burn. Eight of the injuries resulted in admission to hospital.

Discussion

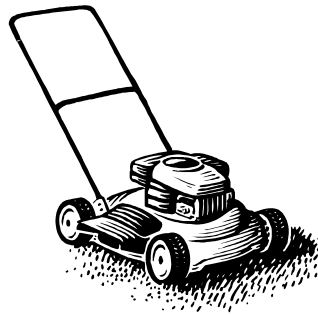
The largest, and probably the most severe, rotary lawnmower injuries are lacerations and traumatic amputations of the hands and feet due to contact with the rotating blade. Most of these injuries, which make up 30% of all mower injuries, could have been prevented if Australia had adopted the US standard for walk-behind mowers. Serious consideration should be given to updating the relevant Australian standard⁹.

Amongst children aged under 5 burns from coming into contact with operating or recently operating mowers appears to be the main cause of injury in this age group. Some of these injuries could be avoided by better design (exhaust guards) but preferably children of this age should not be allowed in the vicinity of mowers at any time.

Ride-on mowers are emerging as a significant injury risk not only because they affect children disproportionately, but because of the severity of the injuries. In this study there were a disturbing number of children aged under 5 injured by ride-on mowers, some of them receiving permanent injuries. As with

walk behind mowers, children of this age must kept confined while these mowers are in use. It is also advisable that children under 15 not be permitted to operate or ride on these machines.

The high number of eye injuries (17%) indicates that a significant number of projectile injuries could be avoided by the wearing of appropriate protective equipment.



Acknowledgments

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Keith Ferguson – Workplace Health & Safety Queensland

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Prevention

There are various levels of prevention strategies. These include:

- legislation and standards;
- point of sale information; and
- training and education.

ATVs

To reduce the risk of ATV incidents, operators must be trained in safe operating procedures. However few people are currently accessing operator training courses being made available by ATV suppliers. Safe operating procedures include but are not limited to:

- reading and following all the manufacturer's operating instructions;
- keeping children (under 16) away from adult size ATVs and attachments;
- not carrying a passenger on an ATV;
- wearing appropriate clothing, boots (not thongs) and a helmet;
- adopting an *active* riding style;
- adjusting all controls so they can be operated comfortably while seated;
- keeping all guards in place particularly foot plates;
- riding at speeds slow enough to retain control over the unexpected and before turning or applying brakes;
- keeping within the manufacturer's load specifications for both front and rear carry racks and ensuring loads are centred over the front or rear axels;
- undertaking regular maintenance of the ATV;
- investigate the feasibility of fitting of roll-over protection to ATVs.

ATVs require an active riding style by transferring the rider's weight from side to side and forwards and backwards to counter balance the ATVs directional mass. A passenger on an ATV prevents an active riding style from being adopted.

Workplace Health and Safety Queensland is currently undertaking a state-wide audit of rural mobile plant on farms that includes tractors, Power Take Off equipment, agricultural motorbikes and ATV safety. The results of this audit of 500 farms from 10 rural industry sectors, is expected to be available later in the year. The audit is intended to not only improve safety standards on the sampled farms but

also raise awareness and bring about better management of safety issues in the broader industry. In relation to ATVs, the audit is focussing on mechanical soundness, guarding, operational safety and stability.

Workplace Health and Safety Queensland is also reviewing the Rural Plant Industry Code of Practice and will include a new section on ATVs to provide advice to industry on the issues associated with safe use.

Lawnmowers

Whilst operators are able to maintain a degree of safety, there is also a responsibility from the manufacturers to produce a safe design. The US standard which involving the blade cutting out when the operator releases the handle needs to be considered under the Australian Standards. Research has proven that this significantly reduces injury. Contact burns could be reduced by incorporating a standard that includes exhaust guards.

Strategies to prevent lawnmower injuries include:

- reading and following all the manufacturer's operating instructions;
- limiting the age of use to over 12 year olds and over 15 year olds for ride ons;
- keep children under 5 away from mowers whether in use or not
- check the area being mowed for objects such as rocks and sticks that have the potential to become missiles and cause injury;
- the area being mowed is dry so that the operator doesn't slip;
- children and pets should never be in the area being mowed;
- wear appropriate clothing including solid, closed shoes, eye and ear protection.

Resources

Workplace Health Safety Queensland

www.whs.qld.gov.au/subject/rural.htm

Farmsafe Queensland

www.farmsafe.com.au

Farmsafe Australia – Child safety on farms

www.farmsafe.org.au/childsafe.htm

Accident Compensation Corporation – NZ

www.acc.co.nz/injury-prevention/ruralsafe/machinery/atvs/

Kidsafe – NZ

www.kidsafe.org.nz/2003/atv.html

Queensland Safe Communities Support Centre

www.SafeCommunitiesQld.org

QISU collects and analyses data from emergency department injury presentations. Participating hospitals represent three distinct areas of Queensland. QISU publications and data are available on request for research, prevention and education activities.

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HOSPITALS:

1998 – current : Mater Children's, Mater Adult, Redland, Royal Children's, Mount Isa, Mackay Base,

Proserpine, Mackay Mater, Sarina, Clermont, Dysart and Moranbah.

1998-2000 Logan, Queen Elizabeth II Jubilee, Princess Alexandra

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