



2020

# RED CROSS WAR MEMORIAL CHILDREN'S HOSPITAL TRAUMA UNIT SURVEILLANCE REPORT

## Abstract

The Red Cross War Memorial Children's Hospital located in Rondebosch is the largest stand-alone tertiary hospital in sub-Saharan Africa, dedicated entirely to children and manages about 250 000 patient visits each year. Most of these patients come from communities across all nine provinces of South Africa and all over Africa. This report focuses on data collected at the Trauma Unit and the Poison Information Centre (PIC) at Red Cross War Memorial Children's Hospital which together treated 31 539 children 12 years old and younger during the last five years 2016 – 2020. There was a 19,73% reduction in childhood injuries recorded at the Trauma Unit when comparing the injuries recorded in 2016 to those recorded in 2020.

## **Acknowledgements**

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**Prepared by Ms. Noluyolo Beja ( Data Clerk)**



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# ChildSafe Child Injury Report

The Red Cross War Memorial Children's Hospital, located in Rondebosch, is the largest stand-alone tertiary hospital in sub-Saharan Africa, dedicated entirely to children and manages about 250 000 patient visits each year. Most of these patients come from communities across all nine provinces of South Africa and all over Africa. This report focuses on data collected at the Trauma Unit and the Poison Information Centre (PIC) at RCWMCH which together treated just over 6000 children in 2020.

The data for this report was compiled by ChildSafe using data from the Trauma Unit which was captured on the REDCap database set up in mid-2018 specifically for this purpose and some data from the PIC database, AfriTox. The report primarily analysed the data from the RedCap summarizing key injury data points which could inform prevention strategies. Given that there are not enough child injury prevention practitioners, it is hoped that this report will help raise awareness of such prevention strategies. Poisoning is considered as an injury type and is detailed in Table 1 below but as it is not included in the Trauma Unit data. Table 1 analyses data of all (0-13years old) children treated in the Trauma unit and Poison Unit at the Red Cross War Memorial Children's Hospital, during the period 2019 - 2020.

**Table 1: Number of children treated at Red Cross War Memorial Children's Hospital Poison and Trauma Unit 2019 - 2020 (0 - 13years old)**

Children's Age	0-12 years	13 years	Total 0-13 years	0-13 years	Total Trauma and Poison
Years	Trauma	Trauma	Total Trauma	Poison	Total Trauma and Poison
2019	6534	33	6567	394	6961
2020	5633	10	5643	359	6002
<b>Cumulative total</b>	<b>12 167</b>	<b>43</b>	<b>12 210</b>	<b>753</b>	<b>12 963</b>

## Most Common Causes of Child Injuries

The WHO: World Report on Child Injury Prevention (2008) outlines that the five most common causes of injury amongst children worldwide include:

1. Falls
2. Road Traffic Accidents
3. Drowning
4. Poisons

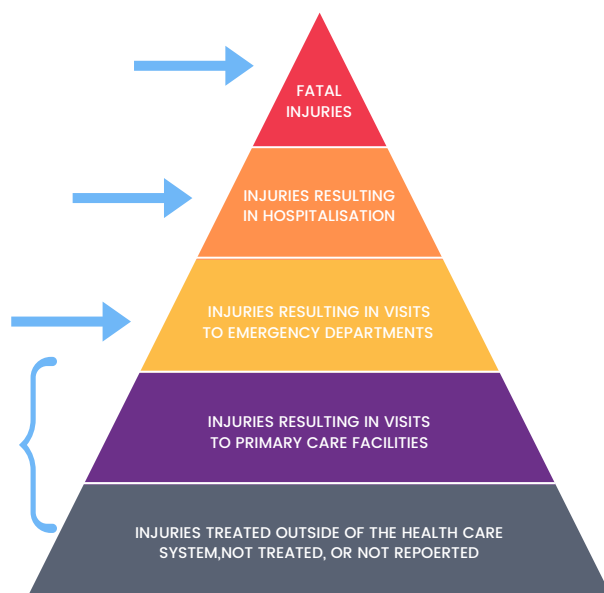
These categories of injuries closely align with the injury statistics reported in this report. Injuries are a leading cause of death and disability among children in South Africa.

## Pyramid of injury

Injury is often represented as a pyramid, with the smallest outcome, death, at the top. Death is the most prominent measure of injury, but death is not the only outcome of injury, nor the most common one.

The Child Safety Network[1] showed that for every child who was fatally injured, 45 other children required hospitalization. Furthermore, the Child Safety Network estimated that for every one child fatally injured, 1300 children were seen in trauma units and countless others were treated outside the health care system or not treated at all.

Unicef[2] in 2008 reported that for every death there are approximately 12 children permanently disabled.



## Childhood Injury at the Trauma Unit - 2020

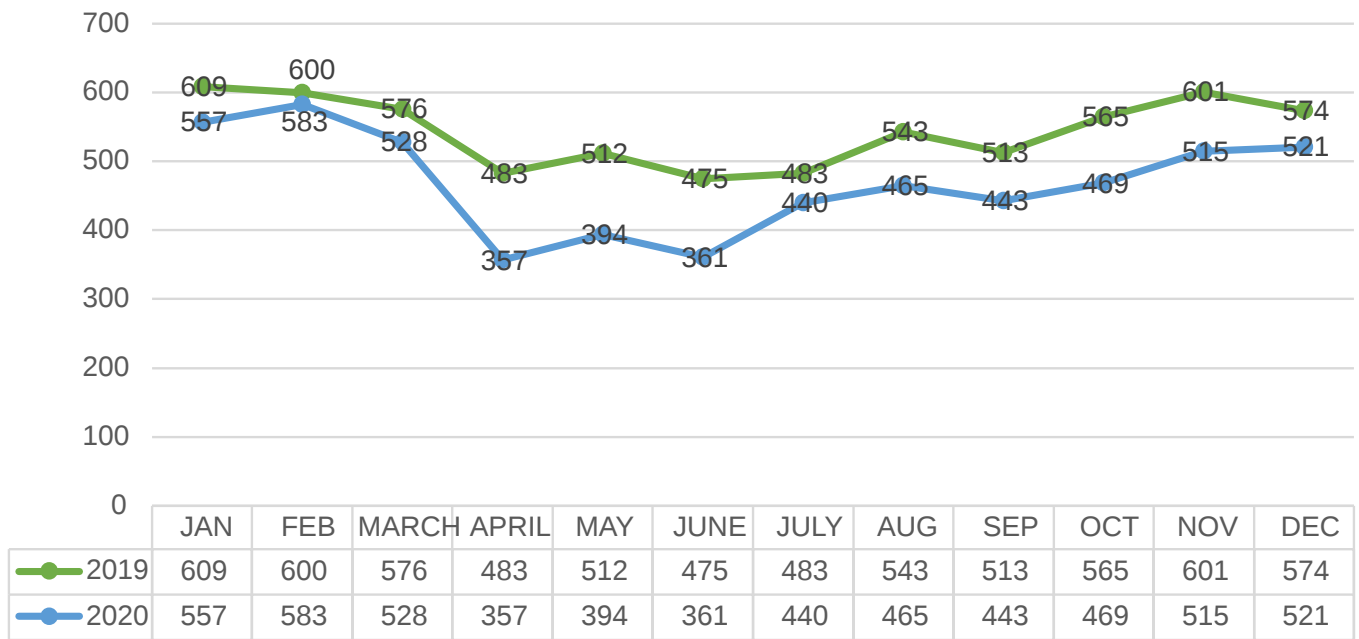
The remainder of this report will analyse data for children from 12 years old and younger as RCWMCH primarily caters for this age group but sometimes, the Red Cross War Memorial Children's Hospital extends the services to children between 12 - 13years old in special circumstances. The ChildSafe Child Injury Report primarily details injuries treated at the Trauma Unit RCWMCH.

[1] Gallagher SS et al. The incidence of injuries in 87,000 Massachusetts children and adolescents. American Journal of Public Health. 1984, 74:1340 - 1347

[2] Linnan M et al Child Mortality and injury in Asia: survey results and evidence. Florence, Unicef Innocent Research Centre, 2007. : survey results and evidence. Florence, Unicef Innocent Research Centre, 2007

An analysis of the years 2019 & 2020 period in which a total of children 12 years old and younger were treated, while there was a 14% reduction in childhood injuries.

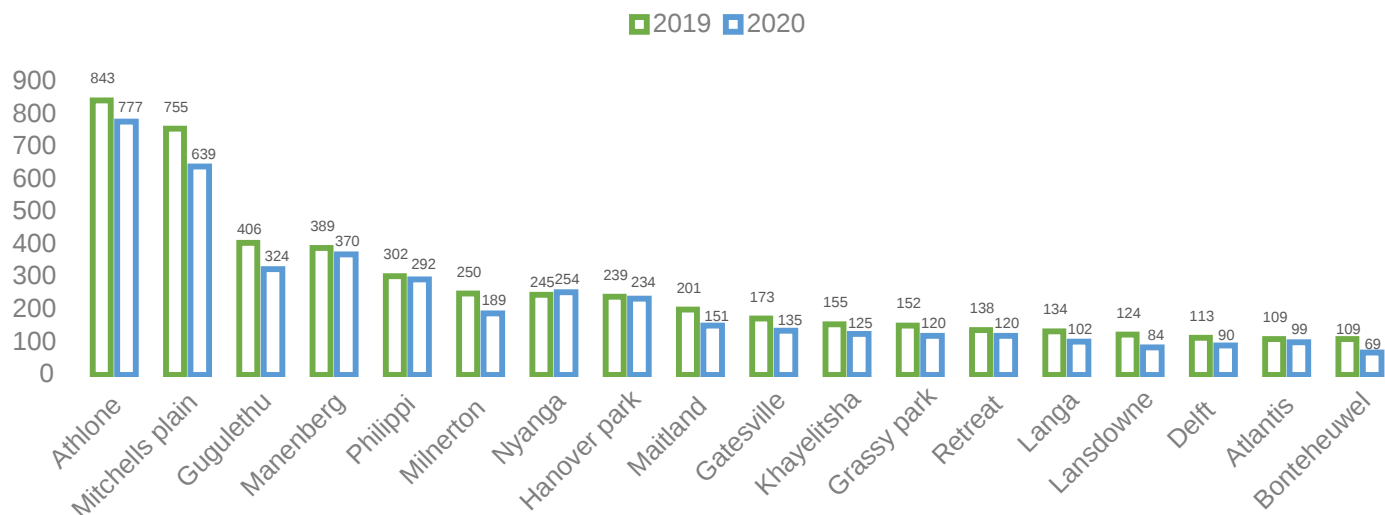
**Graph 1: Total number of children 12 years old and under treated at the RCWMCH Trauma Unit 2019 – 2020 for all injury types**



## Areas in which the children brought to the Trauma Unit reside.

The majority of the children brought to the trauma unit at the Red Cross War Memorial Children's Hospital for treatment resided in about 119 areas in the greater Cape Town and surroundings. The 18 locations which recorded 100 cases, or more in 2019 are compared to 2020 and are represented in graph 2 below. All are located in the Cape Flats. The highest number of child injuries in 2020 (777) were recorded for Athlone. However, only 95 of these children were admitted for further treatment with five of these being severe 5 injuries, while 682 were treated as outpatients for minor (282) or moderate (490) injuries. It must be noted that The Red Cross War Memorial Children's Hospital is located in Rondebosch which is adjacent to Athlone. Given the proximity and given that the RCWMCH has a high standing internationally, may explain why Red Cross War Memorial Children's Hospital is considered by many living in Athlone as the first port of call.

Graph 2: Number of children(0 – 13years old) treated from 18 locations which recorded 100 case or more



## Injury Types

The next section of this report deals with the number of injuries by: (i) type, (ii) gender, (iii) age, and (iv) location. It then details injury by type including poisoning and makes suggestions for prevention strategies per injury type taking into account age or gender where relevant.

Table 2: Total Number children 12 years old and under treated at the RCWMCH Trauma Unit 2019 – 2020 for injury types

All injuries	2019	2020
Assault	216	164
Burns	880	873
Dog Bites	94	105
Falls	2802	2355
Miscellaneous	1037	854
Struck By/ Caught between	736	605
Traffic	769	677
<b>Total</b>	<b>6534</b>	<b>5633</b>

While a decrease of 769 in incidents of injury recorded in the Trauma Unit, between 2019 and 2020 is a cause for optimism, some of it might be attributed to an unintended but positive impact of the various levels of Covid-19 lockdown regulations imposed during much of 2020. This decrease might be continued during 2021 which has also experienced several lockdown regulations. While it would be interesting to see whether there is a significant upswing when the Covid-19 regulations no longer apply it is hoped that the down trend in recorded trauma injuries continues. Still there is cause for optimism. Much work is needed to share these findings with decision-makers, communities, caregivers/parents, and children to raise awareness around child injury prevention.

## Summary of injury types for 2020

In 2020, fall injuries for children 12 and under, accounted for 42% of all injuries. Burns constituted 15%, as did miscellaneous 15%. Traffic crash injuries accounted for 12% while children struck by or caught in between objects made up 11%. Assault injuries stood at 3% and dog bites accounted for 2%. There was no significant shift in the percentage of each injury when comparing the injury counts for 2019 and 2020.

Chart 1: Types of injuries

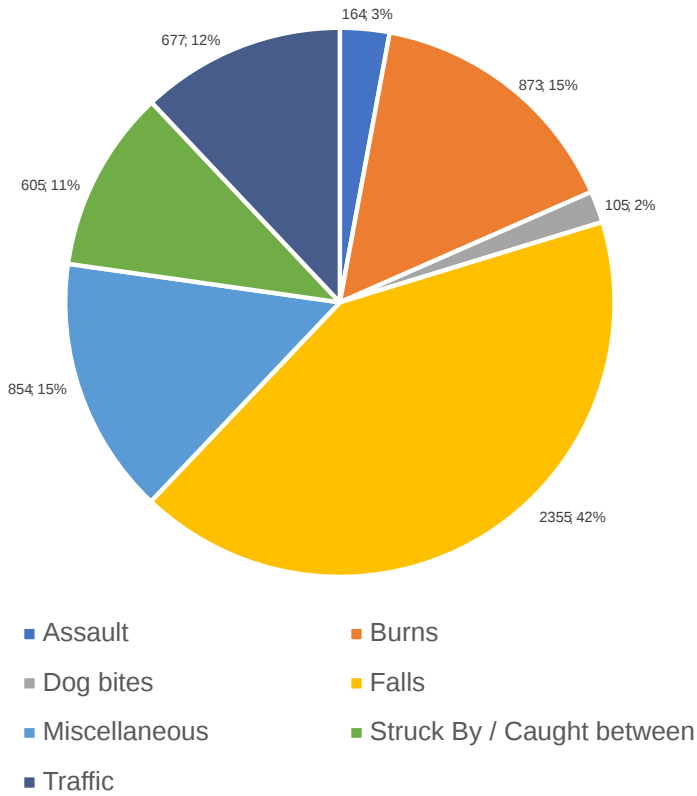


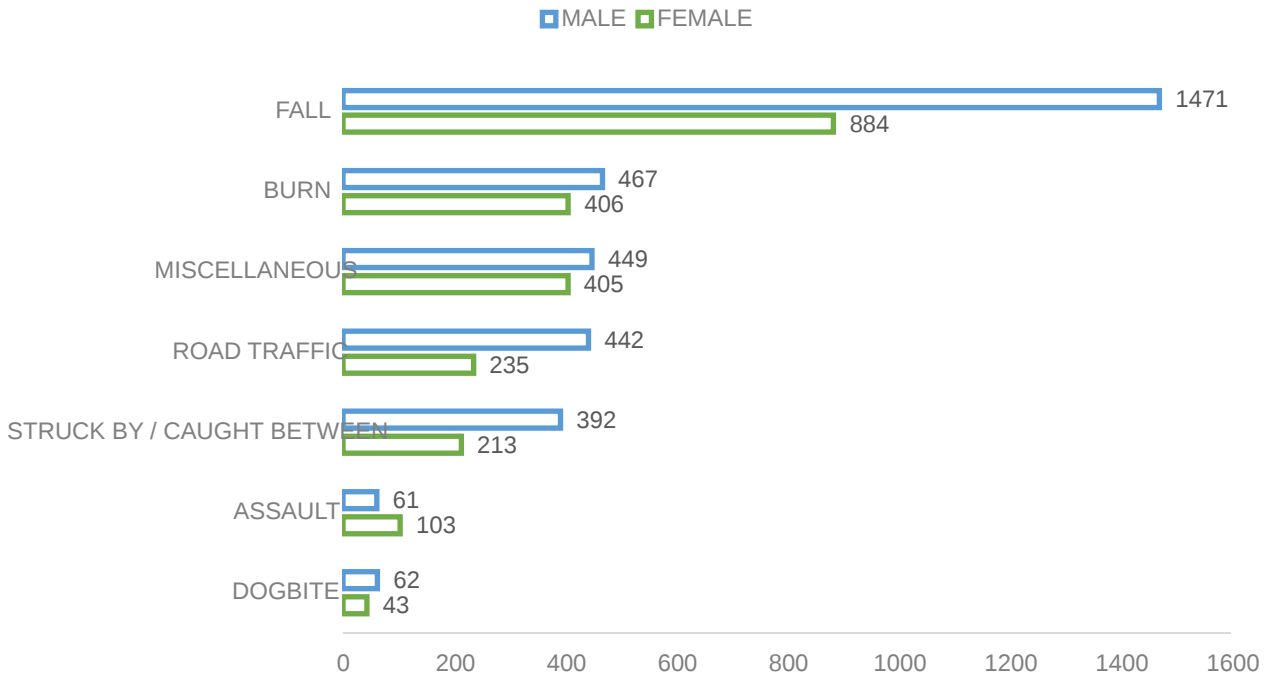
Table 3: Two-year comparison by types of injuries

Injury Type	2019	2020
Falls	43%	42%
Miscellaneous[3]	16%	15%
Burns	13%	15%
Traffic crash injuries	12%	12%
Struck By or Caught in between objects	11%	11%
Assault	3%	3%
Dog bites	1%	2%

[3] Miscellaneous includes sharp instrument, firearm, machinery, other bites, immersion/ drowning, suffocation, food foreign body, other foreign body, and other cause.

# Injury types by gender

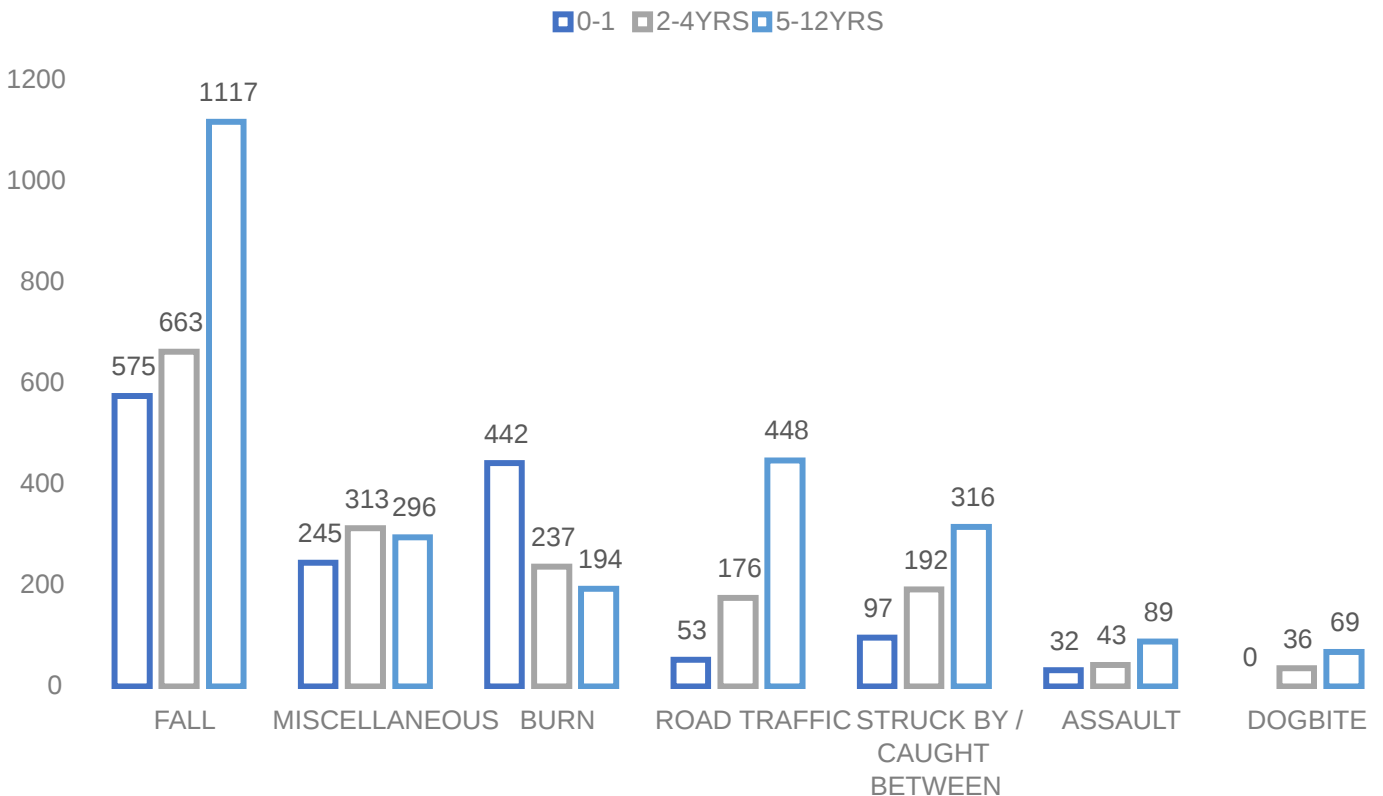
Graph 3: Types of injuries by gender



Boys were treated more than girls across all injury types, except assault. Boys accounted for 60% (3386) of the 5633 children treated; their injuries were also more severe than those of girls and thus more boys were hospitalized than girls for falls.

# Injury types by age

Graph 4: All injury by age



Children between the age of 5 and 12 years accounted for 45% of injuries. Children aged 2 to 4 years accounted for 29% of children treated. Children under 1 year accounted for 26% of injuries.



## Injury types by location and comparison by age

In 2020 children und 0-4 years account for 55% of all injuries, 87% occurred at home, followed by 5% on the road, 4% public place, 2 % at ECD / creche, and other 2% on other places. For children between 5 and 12 years, who account for 45% of all injuries: 62% of injuries occur at home, followed by 15% on the road, 12% in public place, school 7% & other 3%.

Chart 2: Location of injury for 0-4years.

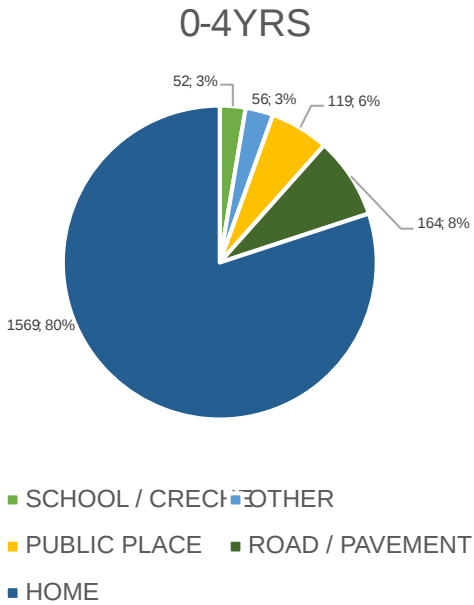
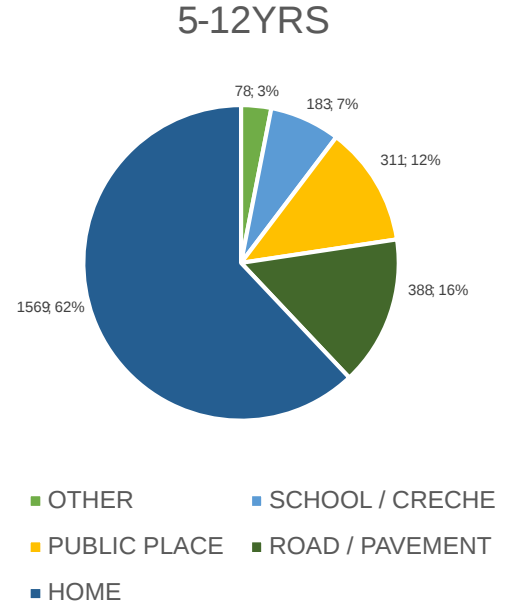


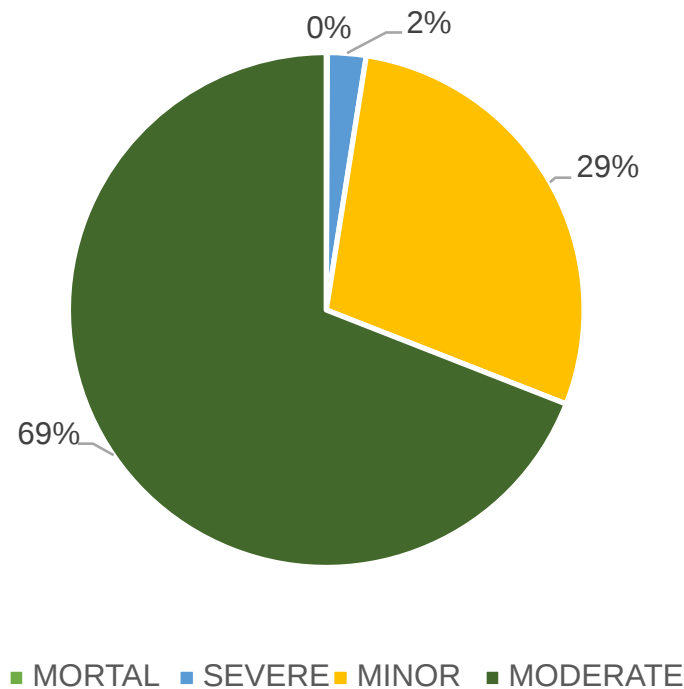
Chart 2a: Location of injury for 5- 12 years



## Severity of Injury

Most children (4282) 76% were injured at home, the majority of these injury could be catergorised as severe , moderate and minor.

Chart 3: Severity of injuries at home



[4]

[4] Minor – minor injuries, all cases discharged home. Moderate – all wounds requiring suturing or any other procedure, requiring theatre, all fractures. Severe – life-threatening, survival probable, critical, Maximal or Mortal – fatal, currently untreatable.

## Head Injuries

In 2020, of the total number of 5633 trauma injuries recorded in respect of children 12 years and under, 854 head injuries were treated at RCWMCH Trauma unit.

- 553 boys sustained head injuries, at almost twice the rate than 301 girls
- 6 children died due to head injuries
- Children under 5 years accounted for 57% (484) of the overall head injuries
- 5- to 12-year-olds constituted 43% (370) of the overall head injuries

The percentage breakdown of head injuries:

- 53% because of falls
- 33% due to traffic-related injuries
- 10% the result miscellaneous incidents
- 3% the result of assault
- 1% due to burns.

## Fatal Injuries

6 Children admitted to Red Cross War Memorial Children's Hospital and died due to preventable injuries In 2020

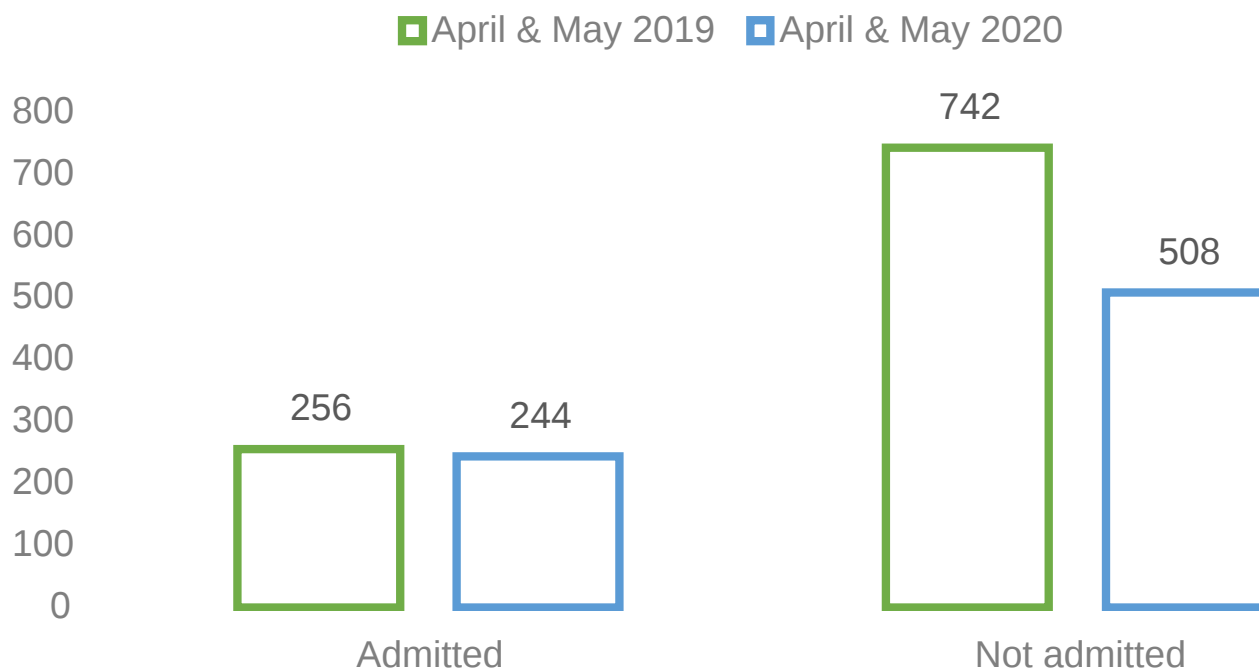
- 3 children died of head injuries due to pedestrian crashes,
- 1 child died of a firearm injury,
- 1 child died of assault with a sharp object
- 1 child died after falling off bed .



## Alcohol ban

During the first alcohol ban in South African from the period of April to May 2020, the Red Cross War Memorial Children's Hospital Trauma Unit treated 752 children with 25% decrease from the previous year 2019 (998). Of 752 children 244 children were admitted 5% decrease from 2019 (256). The graph below shows the number of children admitted and not admitted in 2020 compared to 2019.

**Graph 5: Admissions 2019 & 2020**



The table below shows that all the injuries went down during the alcohol ban period except burn, which increased by 1,3%. Traffic injuries decreased by 3% and fall decreased by 1.4%

**Table 4: All injuries vs the alcohol ban period (2019 – 2020)**

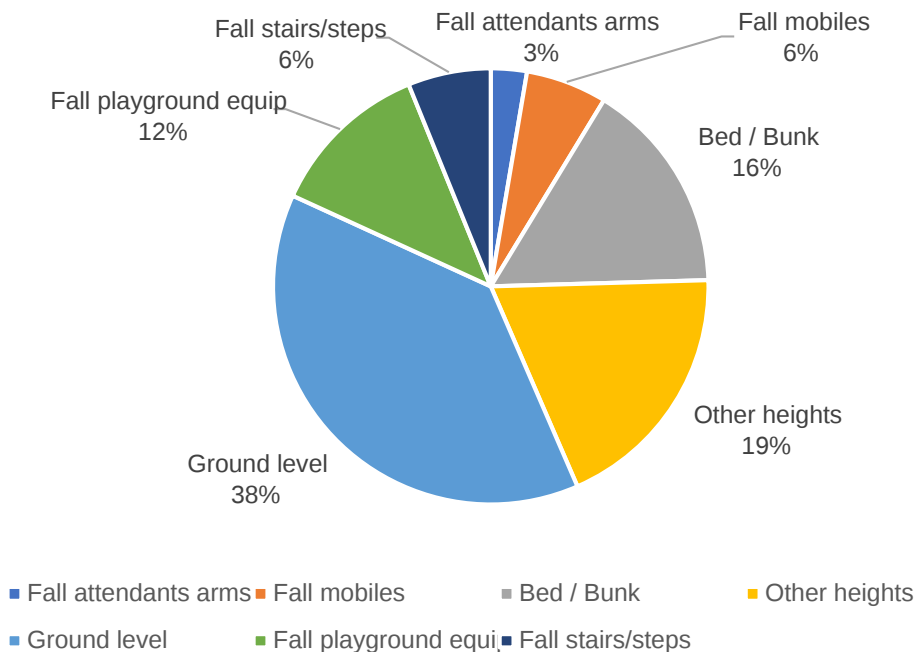
Injury Type	Apr & May 2019	Apr & May 2020
Dog bites	13	9
Assault	45	26
Struck By or Caught in between objects	101	68
Traffic crash injuries	103	39
Burns	121	152
Miscellaneous	155	135
Falls	460	323
<b>Total</b>	<b>998</b>	<b>752</b>

# Falls

## Summary

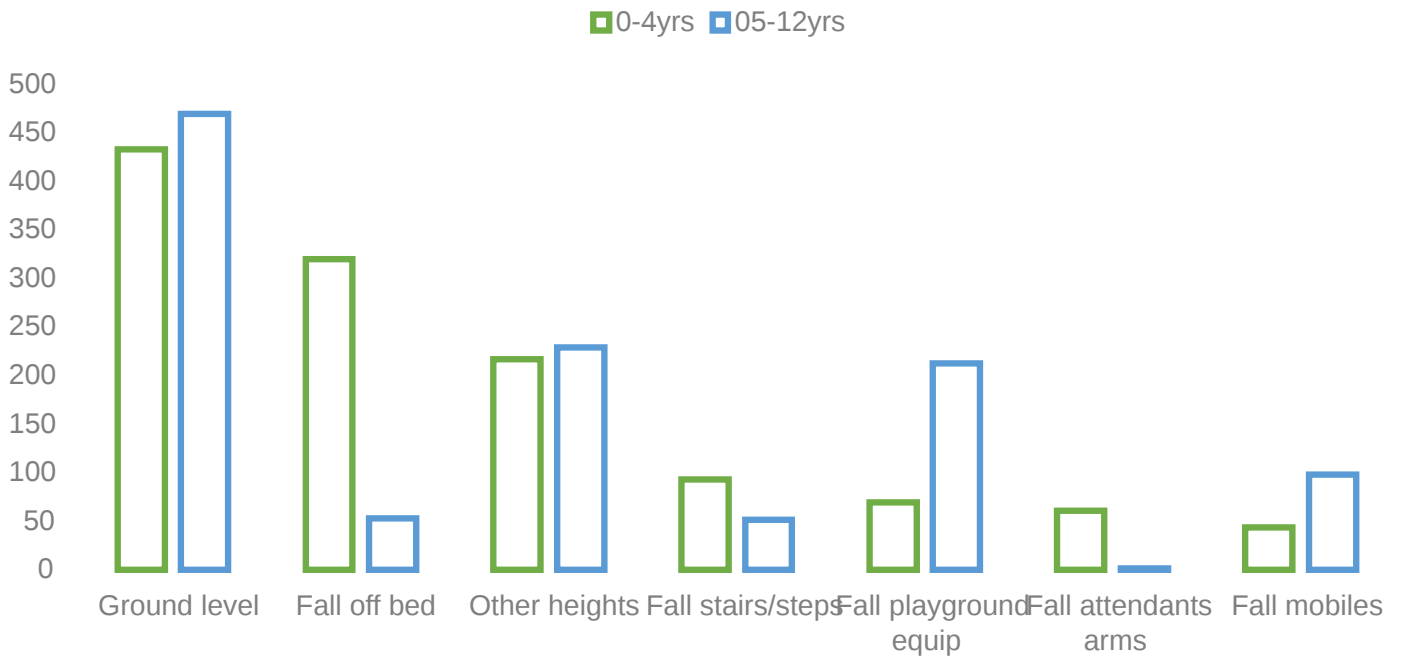
- Falls continue to be the leading cause (42%) of child injury treated at the Red Cross War Memorial Children's Hospital Trauma Unit
- 2355 children were treated for falls, a 16% decrease from 2019 (2802)
- An average of 6 children are treated per day
- Falls accounted for 53% of head injuries
- More boys than girls were treated for fall-related injuries
- Children aged 5 to 12 years were at greater risk of fall-related injuries.
- In both age groups, the home ranked the highest location for fall injuries
- 77% of falls took place at home,
- 13% at playgrounds / public place,
- 7% at schools, 2% at road / pavement &
- 1% at other places
- Children 0 to 4 were at greater risk of falls at home
- Children 5 to 12 years were at greater risk of falling at school and on playgrounds.
- Injuries from tripping, slipping, or stumbling on the same level accounted for 38% of fall injuries and occurred equally across age groups.
- Playground equipment injuries accounted for 12% of injuries.

Chart 4: Leading cause of fall related injuries



Tripping and falling accounts for 38% of all fall injuries at ground level. Falls from other heights include anything above ground level but exclude bunks and stairs, and is the second leading cause (19%) of injuries. Falling off bed/bunk accounts for 16% of fall injuries, falling off playground equipment accounted for 12% of fall injuries. Mobile walking rings being used by young children under 2 years account for 6%. While falling downstairs accounts for 6% and falling out of attendants arms account for 3%.

**Graph 6: Leading cause of fall injury by age**



Children aged 0 to 4 years were at greater risk of fall-related injuries in the home; falling off beds, falling off stairs/steps, and attendants' arms were the highest amongst this age group. Children between 5 and 12 years had the highest rates of playground injuries, mobiles including bicycles, scooters, etc, other height, and ground levels.

## Prevention Strategies

We could reduce the burden of fall injuries through:

- Enforcement of playground equipment height and surface standards and compliance
- Reducing exposure to falls from and within homes and buildings, e.g., through stair guards and window latches.
- Encouraging the use of protective equipment such as helmets when using skateboards, bikes, rollerblades or scooters, etc.
- Reducing opportunities to fall from cots beds and bunks through change in design
- Reducing the use of baby walkers

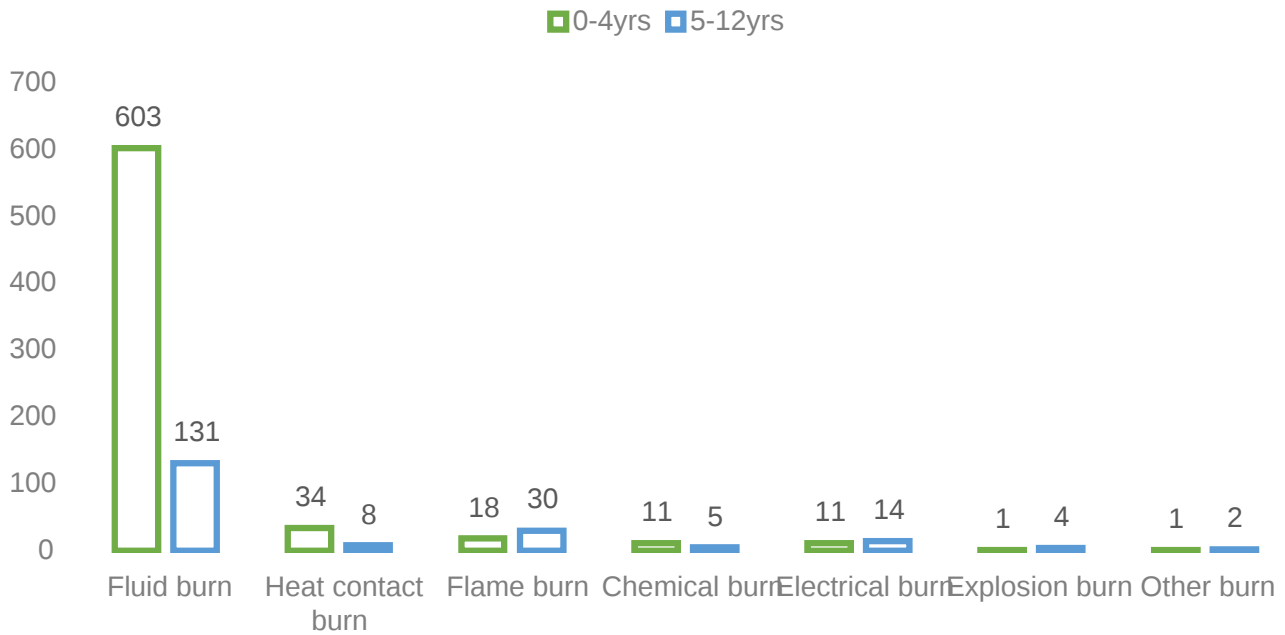


# Burns

## Summary

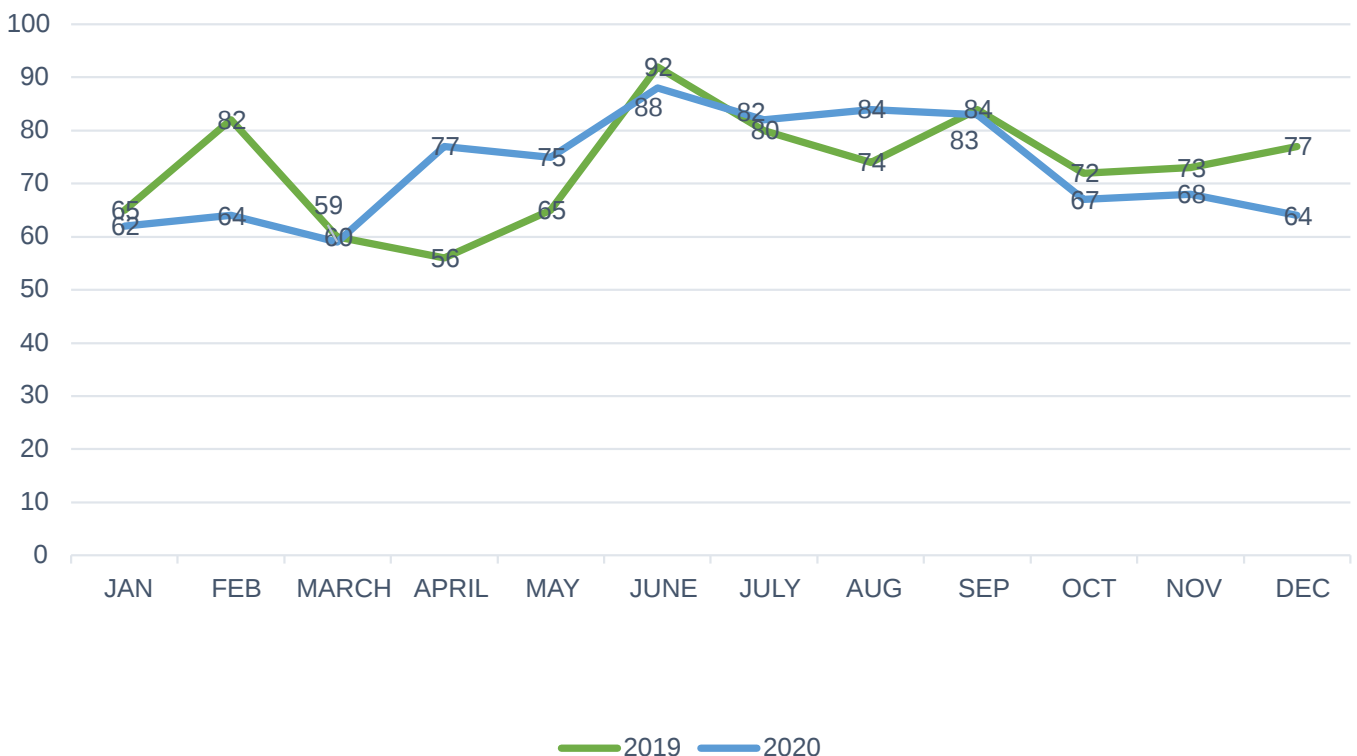
- Burns was the 2nd leading cause of injury in children and accounted for (15%) treated at the Trauma Unit hospital in 2020
- Burn injuries were at their lowest in 2020 (880) with cases treated.880 were treated in 2019.
- 517 of 873 children were admitted for their burn injuries, representing 59% of all burn injuries treated
- Liquid burns accounted for 89% of all burns in children under 5 years
- Nearly all burns took place at home, especially in the kitchen, in children under 4 years
- The severity of the burns was distributed as minor 64, moderate 767, severe 42
- The winter period of June to September had the highest number of burn cases

Graph 7: Cause of burns by age group



Children under 5 years have the highest incidence of burn injuries 78%. Of the under 5 years, 89% of burns were hot fluid burns. Overall hot fluid burns accounted for 84% of all burn injuries across the age groups. All hot fluid burns happened in the home. Burn injuries occur most frequently during the winter season, between June and September when it is coldest.

Graph 8: Burn injuries by time of year



## Prevention Strategies

We can reduce the burden of burn injuries through:

- Using smoke alarms in all homes
- Reducing hot water temperatures to 50 degrees Celsius on hot water geysers
- Teaching parents and caregivers how to make homes burn injury free
- Securing electric kettle cords out of children's reach
- Turning pot and panhandles out of children's reach
- Putting out the candle before leaving a room or going to sleep
- Keeping hot drinks out of children's reach
- Keeping matches and lighters stored out of children's reach

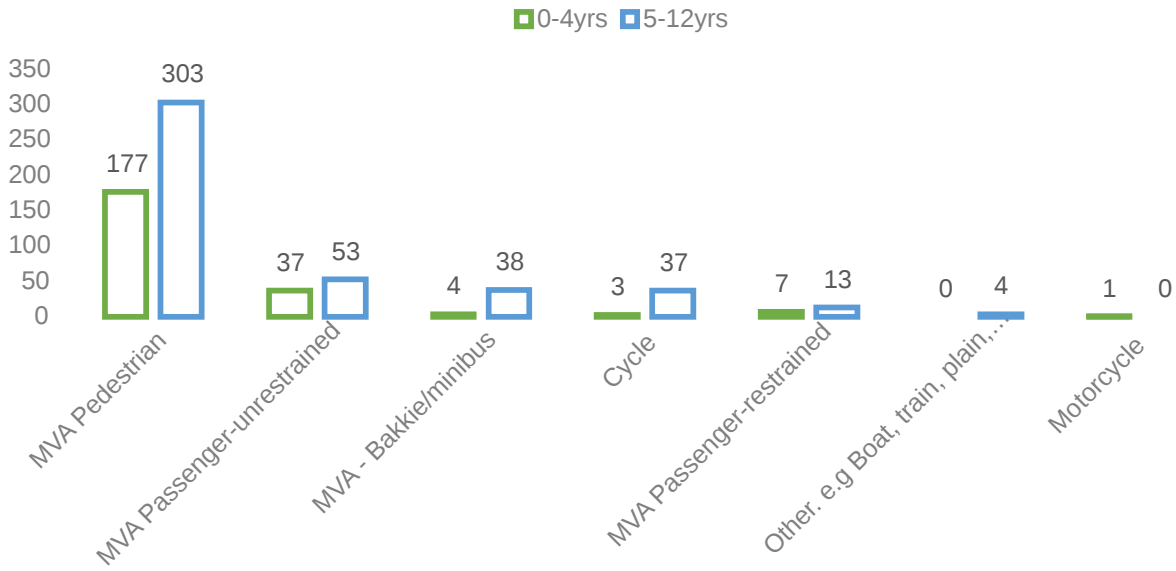


# Road Traffic Crashes

## Summary

- Road traffic injuries are the 4th leading cause of injury in children and account for 12% of all injuries
- In 2020, 677 children were treated for traffic-related injuries, down from 769 in 2019
- Pedestrian injuries accounted for 71% of all traffic injuries
- 63% of pedestrians were aged between 5 and 12 years, and 37% were under 4 years
- Passenger injuries were 22% of traffic injuries
- Of the child passengers treated at RCWMCH Trauma unit, 87% were unrestrained
- Other 7% made up of cycle, motorcycle, & other.

Graph 9: Traffic injuries by age Update

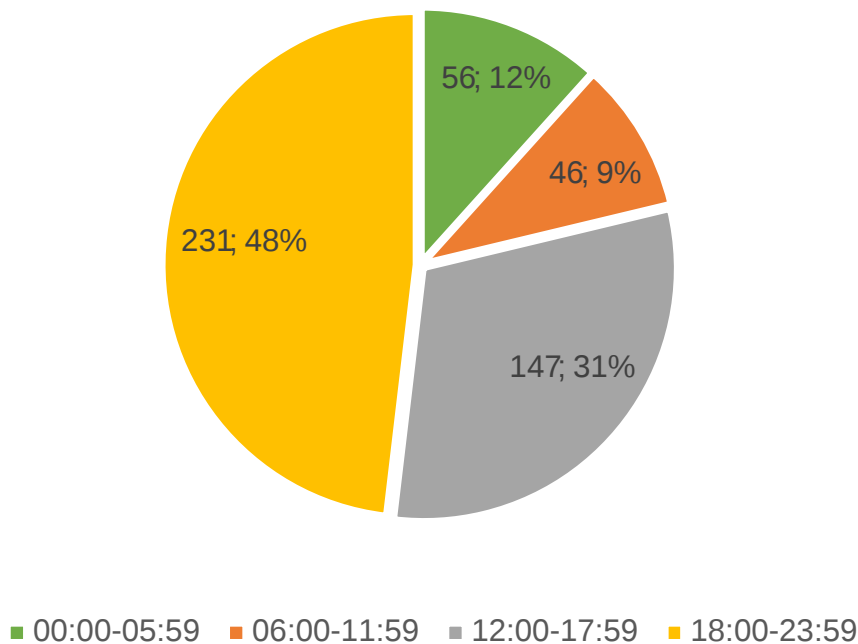


Pedestrian injuries amongst the 5 to 12 age group are almost 2 times the rate of injury in the under 5 age group. Most pedestrians under 5 years were injured while playing near home.

146 children injured while playing outside a home in the yard/driveway or near home.

Passenger injuries in age 5 to 12 years were 1.5 times more than the rate of such injury among children under 5 years.

Chart 5: Time of the day for MVA pedestrian injuries



The lowest rate of injury (9%), occurs when the majority of children are in school. While the time immediately after children leave school, shows a significant increase.



## Prevention Strategies

We could improve pedestrian safety through:

- Reduction of speed limits in residential areas and school zones, and improving enforcement of regulations
- Separating pedestrian access paths from vehicle driveway
- Separating driveways from garden areas and play areas
- Training children to be safe on the road
- Continuous Community awareness programmes around children as road users

We could improve passenger safety through:

- Raising awareness of drivers of the need to use child restraints
- Amending legislation for use of child restraints until the child reaches the height of 148cm
- Encouraging drivers to become aware of the driving behaviour (defensive driving training or use of trackers)
- Enforcing alcohol limits for drivers
- Traffic calming measures on roads (speed bumps etc)

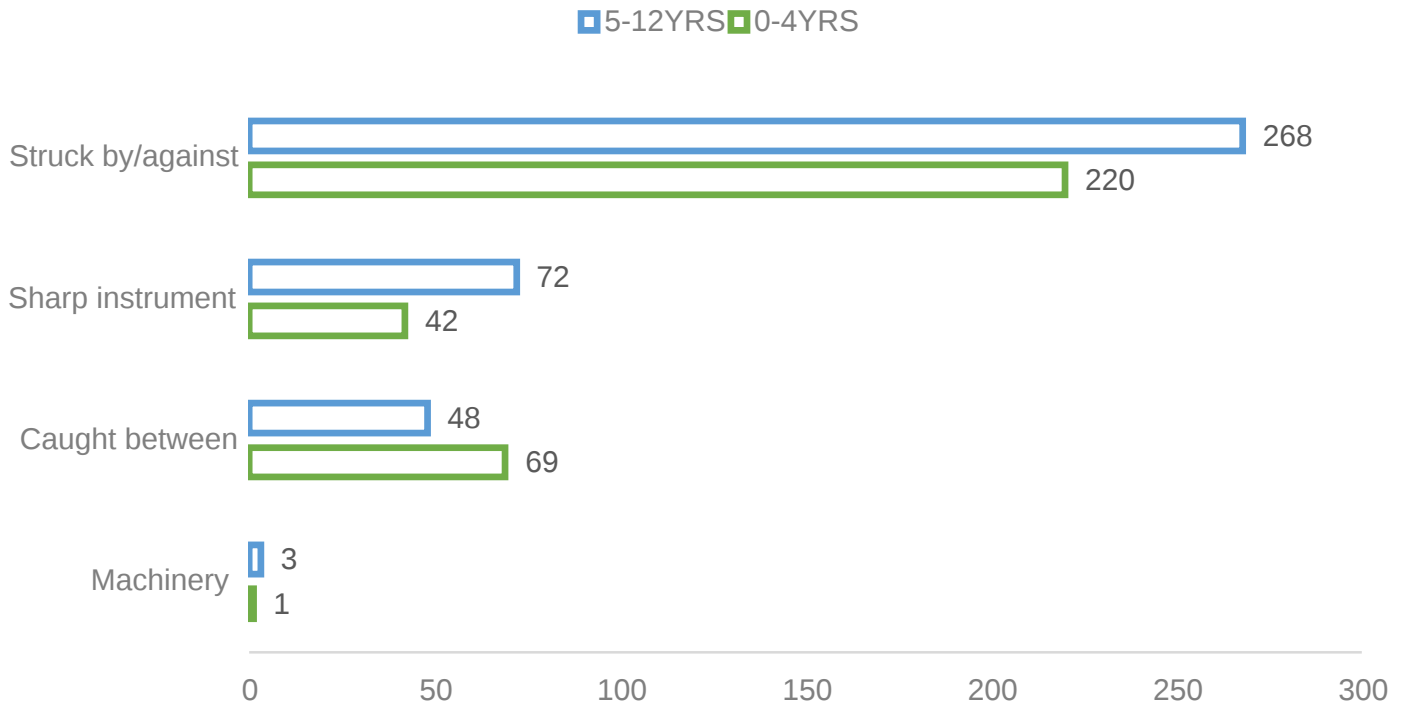


# Mechanical forces – crushing, piercing, jamming injuries from objects

## Summary

- In 2020, 723 children were treated for mechanical force injuries at Red Cross War Memorial Children’s Hospital
- Older children were more often injured from contact with glass or being struck against or by objects (e.g., doors and sports equipment)
- Boys were injured 1.5 times as frequently as girls

Graph 10: Leading cause of mechanical injury by age group



## Prevention Strategies

We can help prevent mechanical force injuries in children by:

- Using safety glass in homes in furniture, windows, and doors
- Home visitation programmes to support parents to create a safer home environment.
- Spotting and removing sharp and pointed objects at home and play areas

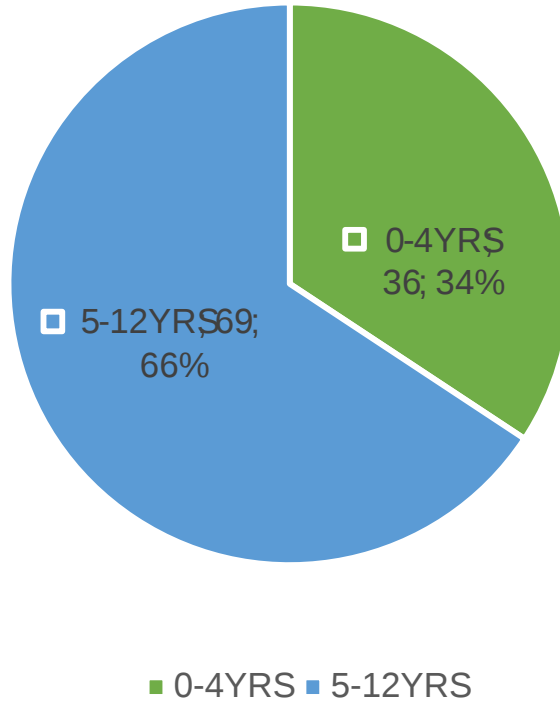


# Dog Bites

## Summary

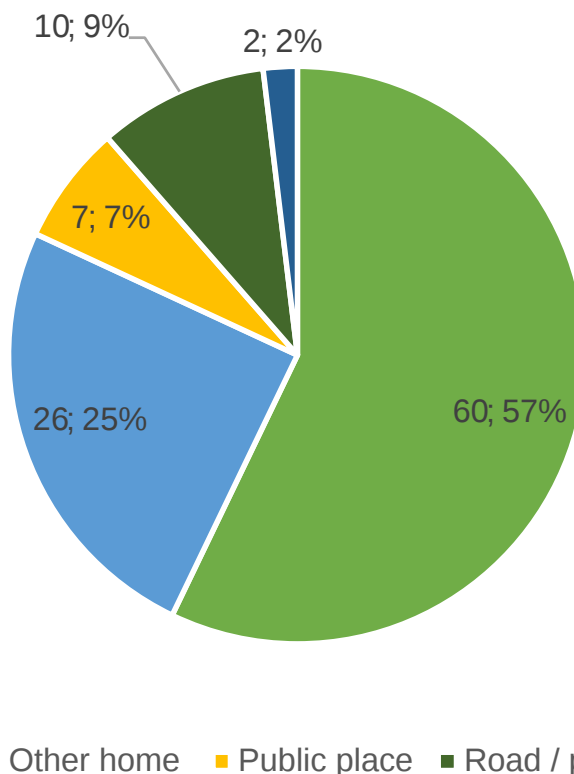
- Dog bites were the 7th leading cause of injury in 2020
- In 2020, 105 children were treated for dog bites
- Children between the ages of 5 and 12 years were more likely to be treated for dog bites, accounting for 66% of injuries due to dog bites
- The dog bite injuries happened at the child's home in 57% of the cases, at another home 25% of cases, and in a public place, a road, and other 18% of cases
- Boys were bitten by dogs 1.5 times the rate of girls
- 24% of children were admitted to hospital for injuries

Chart 6: Dog bite injury by age group



Children between the ages of 5-12 years are twice as frequently injured through dog bites than younger children.

Chart 7: Dog bite injury by location



■ Own home ■ Other home ■ Public place ■ Road / pavement ■ Other

## Prevention Strategies

To help prevent dog bite injuries in children we should:

- Never leave a small child alone with a dog, no matter, if it is the family dog, a dog that is known to you, or even a dog that you have been assured, is well behaved. Any dog can bite
- Educate families on neutering male dogs and avoid choosing unsafe breeds as pets
- Educate children on how to interact with unfamiliar and pet dogs
- Not allow children to play aggressive games with a dog, such as a tug-of-war or wrestling, as this can lead to bites
- Teach children to ask a dog owner for permission before petting any dog
- Take dogs for training



## CONCLUSION

While children can never be entirely protected from injury, research has shown that a significant portion of unintentional injuries are preventable. It is ChildSafe's hope that routine data sharing regarding child injury can illustrate the importance of data collection, standardization, and quality.

Data on the circumstances of injury, location, and community details, can all work toward a systematic surveillance of child injury to inform our prevention and response interventions. Quality, routine data can also inform resourcing policies and programs to reduce the burden that child injuries place on the government system.

If we simply replicate safety strategies designed for adults, we cannot provide adequate protection for children. Prevention guided by strong data collection and analysis specific to children is critical. Preventative safety strategies designed specifically for children which consider various child developmental issues, risk-taking behaviours, levels of activity, and the child's degree of dependence are important for the success of safety strategies. The most effective programs for reducing childhood deaths and hospitalizations are those that consider childhood vulnerabilities and use a multidisciplinary approach.

The World Report on Child Injury Prevention (2008) advises that there is no single strategy for success, but six basic principles that when done together can be successful in preventing child injuries:

1. Legislation and regulations, and their enforcement
2. Product modification
3. Environmental modification
4. Supportive home visits
5. The promotion of safety devices
6. Education and the teaching of skills with careful supervision of children at all times.

We need to continue to focus on evidence-based interventions and sustained investment in injury prevention and control for children. Injury prevention strategies need to be designed to target the specific needs of different age groups where injury rates are significantly higher and ensure that there is ongoing community engagement.

We also need to consider the general population and ensure that we continue to focus on providing contemporary programs and interventions for all new parents to ensure the safety of generations to come.

While still allowing children to grow, develop, take risks and play, we can achieve a greater reduction in injuries and a reduced burden on the health system and emotional toll on families who must deal with the loss/serious injuries of a child.



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### **Graphs**

1. Graph 1: Total number of children 12 years old and undertreated at the Red Cross War Memorial Children's Hospital Trauma Unit 2019 – 2020 for all injury types
2. Graph 2: Number of children (0 – 13years old) treated from 18 locations which recorded 100 cases or more
3. Graph 3: Types of injuries by gender
4. Graph 4 : All injuries by age
5. Graph 5: Admissions 2019 & 2020
6. Graph 6: Leading cause of fall injury by age
7. Graph 7: Cause of burns by age group
8. Graph 8: Burn injuries by time of year
9. Graph 9: Traffic injuries by age Update
10. Graph 10: Leading cause of mechanical injury by age group