**Title:** **Children falling out of windows: An audit from a paediatric tertiary trauma unit**

**Aims:**It is well known that falls from height can cause significant injury in children. The aim of this audit was to review injury pattern, consultant presence, safeguarding practices and highlight any areas for improvement within service and response to children that had fallen out of windows.

**Methods:**This was a retrospective audit via electronic records of all children (0-18yrs) who presented to University Hospital Southampton, a tertiary paediatric trauma centre after falling from a window in 2019 and 2020. We collected data on multiple aspects of their presentation and admission.

**Results:**Our audit included 8 children (4 males, 4 females) with a median age of 2years 3 months. All injuries occurred at home between 10:45am and 21:45pm; mostly on a Thursday (n=3) and Friday (n=3) with the remainder presenting on Sunday (n=2).

HEMS were asked to attend most incidents (n=7). Of these children, most were transported to hospital via ambulance (n=5), others via helicopter (n=2). The other child self-presented.

All cases were seen in resus, seven ran as level 1 traumas with consultant presence on arrival and a median time in the Emergency Department (ED) of 1hour. The other ran as a level 2 trauma, with no documentation of consultant presence and was in ED for 6hours.

Isolated head injury occurred in four children. Two children had head injuries with additional significant bony injury (femur and pubic rami fracture). Two had no head injury but other injuries including splenic laceration and significant bony injury. CT brains were performed in seven children and two received tranexamic acid. Intubation occurred pre-hospital in two cases and in ED in four cases, however one of these was due to haemodynamic instability rather than neuro-protection.

Further imaging after ED was predominantly ultrasound of the abdomen, however waiting for this imaging resulted in delayed diagnosis of a splenic laceration. Theatre was required in three cases – neurosurgery, ORIF of a femur fracture and a splenectomy.

In all cases safeguarding was considered and the appropriate paperwork competed. Of these cases three were discharged into social or foster care.

**Conclusion:**

All children presenting with this mechanism should be managed as a level 1 trauma as per trauma criteria and have safeguarding considered. This would ensure consistent management and consultant presence with subsequent reduced time in ED, as well as possible improvement in diagnosis and treatment of significant injury.

The neurosurgical team are not routinely on our trauma bleep and with the prevalence of significant head injury in this mechanism, we recommend early or advanced discussion with them.

Falls from windows result in a variety of life-threatening injuries with possibility for missed diagnoses. We therefore, propose a secondary survey including abdominal imaging such as ultrasound, should be completed in ED after initial imaging and before transfer elsewhere unless lifesaving intervention is needed such as emergency theatre. In the future we hope to promote some injury prevention strategies.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Case 1** | **Case 2** | **Case 3** | **Case 4** | **Case 5** | **Case 6** | **Case 7** | **Case 8** |
| **Gender:** | Male | Male | Female | Female | Male | Female | Male | Female |
| **Age:** | 1yr 3months | 1yr 4months | 2yrs 2months | 2yrs 3 months | 2yrs 3months | 6yrs 9months | 7yrs 4months | 9yrs 8months |
| **Incident Location:** | Home | Home | Home | Home | Home | Home | Home | Home |
| **Mode of arrival:** | Ambulance | Ambulance | HEMS | Self-presented | HEMS | Ambulance | HEMS | HEMS |
| **Day:** | Thursday | Friday | Thursday | Sunday | Sunday | Friday | Friday | Thursday |
| **Time of arrival:** | 12:18 | 15:12 | 19:45 | 21:45 | 16:33 | 21:05 | 13:45 | 10:45 |
| **Direct admission:** | Ambulance | Ambulance | HEMS | Self-presenting | HEMS | Ambulance | HEMS | HEMS |
| **Level:** | One | One | One | One | One | Two | One | One |
| **Cons present on arrival:** | Yes | Yes | Yes | Yes | Yes | Not documented | Yes | Yes |
| **Area seen in ED:** | Resus | Resus | Resus | Resus | Resus | Resus | Resus | Resus |
| **Mechanism of injury (fall from):** | 2nd floor | 2nd floor | 3rd floor | 1st floor | 1st floor | 1st floor | 1st floor | 1st floor |
| **Injuries sustained:** | Right femur # | Bilateral skull #s, subdural + subarachnoid bleeds | Basal + Occipital skull #s, subarachnoid bleed + Pubic ramus # | Right frontal, orbit & temporal bone #s, right frontal lobe + subdural bleed. | Splenic laceration, compression # T6 | Left frontal/orbit skull #, left temporal haematoma | Right parietal & temporal skull #s, extradural haematoma + subarach ext. | Right femur #, right radius # |
| **Management in ED:** | Analgesia, sedation, intubation, fluids, neuroprotection, limb care, TXA | Intubation, Fluids, Neuroprotection | Fluids, Blood, Neuroprotection | Intubation, Fluids | Sedation, Intubation + TXA | Analgesia | None documented | Analgesia, Limb care (traction), Femoral nerve block |
| **Time in ED:** | 1.5 hours | 30 mins | 2 hours | 1 hour | 1 hour | 6 hours | 40 mins | 2hours 45mins |
| **Imaging within ED:** | CXR, pelvis x-ray, CTB | CTB + CT c-spine | CTB + Pelvis, C-spine & Chest x-rays | CTB, C-spine & Chest x-ray | CTB | CTB, CXR, Knee x-ray | CTB, CT c-spine, CXR | CXR, Pelvis, right femur & right radius/ulnar x-rays |
| **Imaging after ED:** | USS abdomen | USS abdomen, CXR | USS abdomen | USS abdomen, Lumbar & thoracic spine x-rays | USS abdomen, CXR, CT CAP | None | Right clavicle & shoulder x-ray, Left ankle & foot x-ray | None |
| **Care following ED:** | PICU admission | Theatre - neurosurgery | PICU admission | PICU admission | PICU admission | Ward admission | PICU admission | Theatre – ORIF |
| **Admission areas:** | PICU, G3 | Theatre, PICU, G2 | PICU, HDU | PICU, G2 | PICU, Theatre, Ward | G2 | PICU, G2 | Theatre, G3 |
| **Length of stay:** | 15 days | 35 days | 8 days | 4 days | 9 days | 2 days | 3 days | 4 days |
| **ISF/Safeguarding actions:** | ISF done  Discharged to social care | ISF done  SS contacted | ISF done  Foster care on discharge | ISF done | ISF done | ISF done | None documented | ISF done |
| **Rehab:** | None | PT/OT + SALT | PT + SALT | None | None | None | None | PT/OT |