Prevention of Entanglement, Strangulation, Entrapment and Falls Related to Medical and Non-Medical Equipment

Maureen Maloney RN MA, Helen Edwards, RN MN, Cheryl Harris RN, Biljana Ljubicic RN, Kim Meighan RN, Kim Streitenberger RN

Introduction
In 2002 and 2003 Health Canada issued two notices that:
- advised hospitals about the risk of strangulation in young children due to entanglement by medical tubings and cords
- provided recommendations to minimize this risk.

At The Hospital for Sick Children, through efforts to address the risk of entanglement and strangulation, we were able to situate this issue in a larger context of patient safety and thus address other risks.

Prevention Of Entanglement Task Force

Mandate:
To develop policies/guidelines/procedures including a risk assessment tool and preventive strategies.

Process:
- Literature Search
  - Very little documentation on entanglement/strangulation in the paediatric population in the hospital environment.
- Market Search
  - Identified only one medical line stabilizer in North America.
- Benchmarking
  - Invaluable in allowing us to share ideas and experiences with colleagues across Canada who were also struggling to incorporate the Health Canada recommendations into workable solutions for their institutions.
- Broadening Mandate and Scope
  - Including all the potential risks that a bedside environment poses to children is more comprehensive and support the hospital’s efforts to create a culture of patient safety.
  - Included bed safety in the policies/guidelines/procedures as many of the risk factors for bed entrapment are similar to those identified for entanglement and strangulation.
  - Inpatient safety checklist – incorporates the risk assessment and preventive flowsheet, thus eliminating the need for additional documentation.

Inpatient Safety Checklist

The inpatient safety checklist was developed in collaboration with nursing staff with the aim of providing a hospital-wide and consistent set of items under the following categories:

Patient Identification
- Bedside and Safe Environment
- Prevention of Entanglement, Strangulation, Entrapment and Falls related to Medical and Non-Medical Equipment
- Respiratory Care
- Electronic Monitoring
- Intraoperative Therapy
- Enteral Therapy
- Devices
- Dressings
- Patients Identified as at Risk for Self-Harm

Risk Assessment And Interventions

Entanglement/Strangulation Interventions:
- Remove unnecessary tubings/cables/cords – for example: saline lock IVs, change method of oxygen delivery, ensure patients meet established criteria for continuous electronic monitoring
- Reposition necessary tubings/cables/cords – for example: secure through clothing or use burn netting vests, coil excess tubing, avoid the use of IV extension sets
- Apply appropriate medical line stabilizer – in addition to the commercially available medical line stabilizer was not always appropriate for use with multiple tubings and cords, and staff preferred the corrugated oxygen tubing
- The gap reduction devices were not required during the pilot on the 2 units, but, were found useful on another unit not involved in the pilot.
- During the introduction of the new standards and safety checklist, local and project leadership was essential to ensure compliance on a consistent basis.
- Risk criteria are guidelines only. Whether or not a patient is at risk must be evaluated based on the nurse’s clinical judgment and the patient’s previous history

Entrapment/Fall Interventions:
- Consider the following factors when choosing an appropriate bed or crib – age, size, activity level, cognitive/developmental status, level of consciousness, what patient is accustomed to
- When beds are in use, weigh the risks associated with raised bedrails against the potential benefits
- Increase level of observation
- Apply restraints according to hospital standards

Parental Involvement:
- Parents should be included in prevention strategies through:
  - Education
  - Discussion about child’s usual behaviours when alone, ill or distressed
  - Negotiation about what prevention strategies to adopt when parents are present and when they are asleep or not present.

Pilot And Evaluation

A pilot of the new standards and the safety checklist, including the risk assessment tool and preventive strategies, was conducted on two inpatient units over a period of six weeks.

Evaluations included:
- Questionnaires and focus groups
- Chart audits
- Bedside audits

Pilot Evaluation Results:
- The new standards and the safety checklist:
  - were generally positively received
  - were sufficiently comprehensive and generally reflected the practices already being carried out in many patient care areas
  - required only minor revisions, offering more unit specific examples, rather than revising items on the checklist itself
- The commercially available medical line stabilizer was not always appropriate for use with multiple tubings and cords, and staff preferred the corrugated oxygen tubing
- The gap reduction devices were not required during the pilot on the 2 units, but, were found useful on another unit not involved in the pilot.
- During the introduction of the new standards and safety checklist, local and project leadership was essential to ensure compliance on a consistent basis.
- Risk criteria are guidelines only. Whether or not a patient is at risk must also be evaluated based on the nurse’s clinical judgment and the patient’s previous history.

Entrapment, Strangulation, Entrapment and Falls Related to Medical and Non-Medical Equipment

Believe.