WRHA Long Term Care (LTC) Program

Bed Safety Resource Guide Self-Learning Companion

Winnipeg Regional Health Authority
Caring for Health
Office régional de la santé de Winnipeg
À l'écoute de notre santé

Every Resident deserves a **safe** and comfortable sleep and bed environment.

The WRHA LTC Bed Safety Resource Guide was created in collaboration with an interdisciplinary team from across the Winnipeg Health Region's LTC sector to assist sites/facilities to:

- Understand the risks and resident factors that contribute to bed safety events
- Determine which beds present risk for entrapment events
- Provide guidance to mitigate and/or manage risk when beds fail testing

Proceed to the next slide to start **Module One.**

Module One is intended for;

- Frontline care providers
- Interdisciplinary care team members
- Facility Management/Maintenance

To proceed directly to **Module Two**, click here.

Module Two is intended for staff involved in testing of the bed system using the Bed Testing Kit.

MODULE ONE

- Bed Entrapment
- Know Your Zone
- History of Bed Rail Use
- Understanding Risk, Alternatives, and Benefits
- Using Bed Rails Safely

Bed Entrapment

The term “entrapment” describes an event in which a Resident is caught, trapped or entangled in the space in or about the bed side-rail, mattress, or hospital bed frame.

Understanding the Risk: Know Your Zone

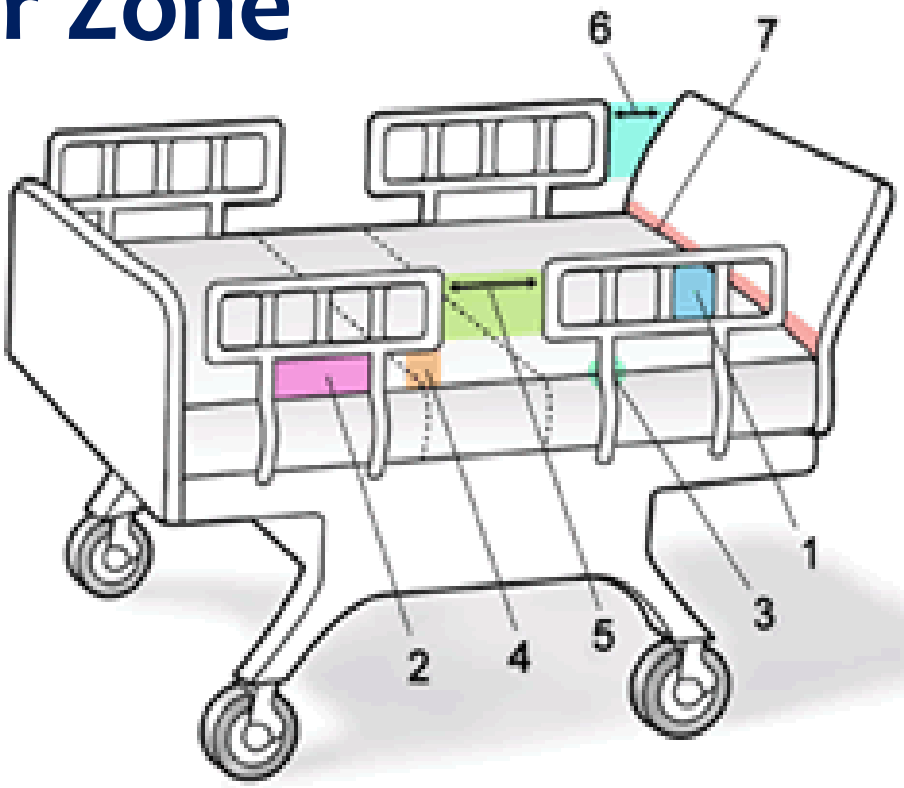
Zone 1: Within the Rail

Zone 2: Under the Rail, Between the Rail Supports or Next to a Single Rail Support

Zone 3: Between the Rail and the Mattress

Zone 4: Under the Rail at the Ends of the Rail

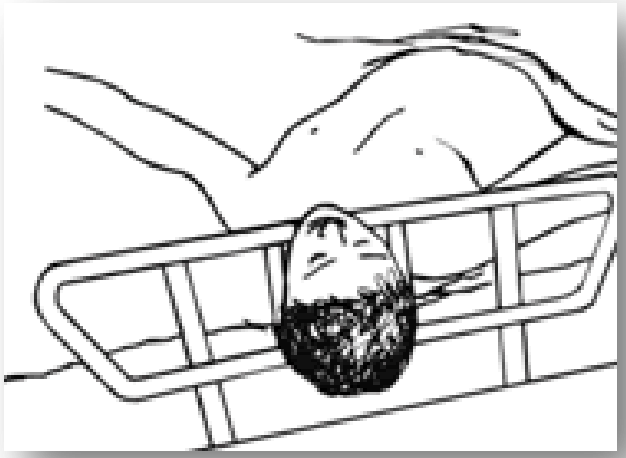
Zone 5: Between Split Bed Rails



Zone 6: Between the End of the Rail and the Side Edge of the Head or Foot Board

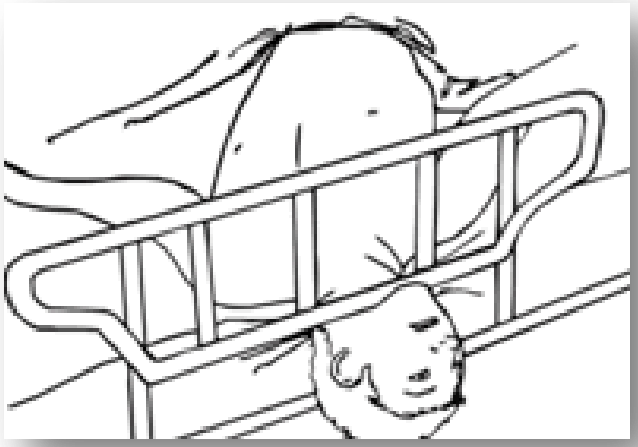
Zone 7: Between the Head or Foot Board and the Mattress End

Zone 1: Within the Rail



- Any open space within the perimeter of the rail.
- Openings in the rail should be small enough to prevent the head from entering.
  - A loosened bar or rail can change the size of the space.

Zone 2: Under the Rail, Between the Rail Supports or Next to a Single Rail Support

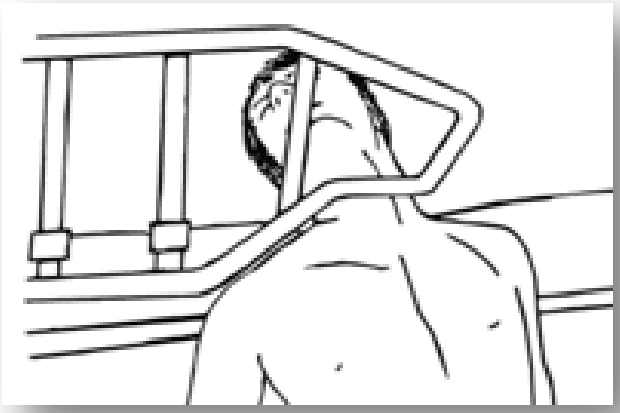


- gap under the rail between a mattress compressed by the weight of a resident's head and the bottom edge of the rail

Zone 3: Between the Rail and the Mattress

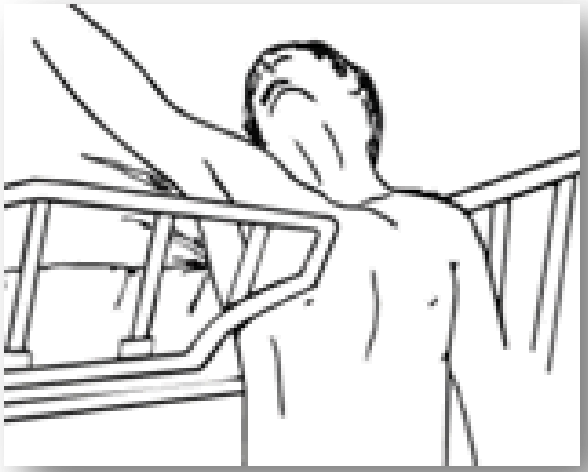
- The space between the inside surface of the rail and the mattress compressed by the weight of a resident's head.

Zone 4: Under the Rail at the Ends of the Rail



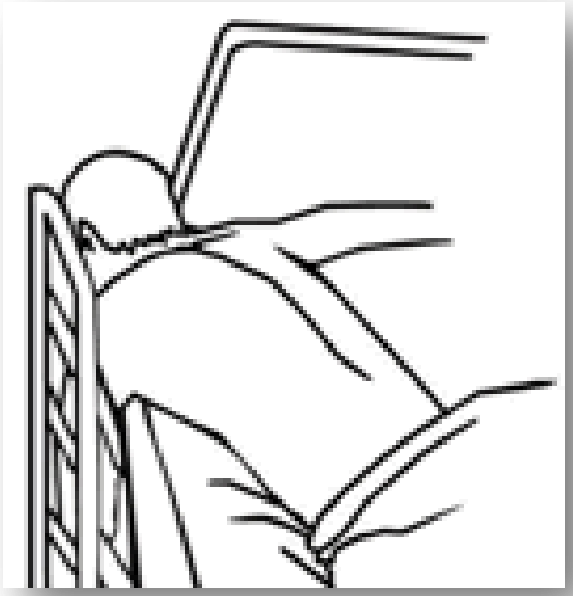
- The gap that forms between the mattress compressed by the resident, and the lowermost portion of the rail, at the end of the rail.
- The space poses a risk for entrapment of a resident's neck. It may change with different rail height positions and as the head or foot sections of the bed are raised and lowered.

Zone 5: Between Split Bed Rails



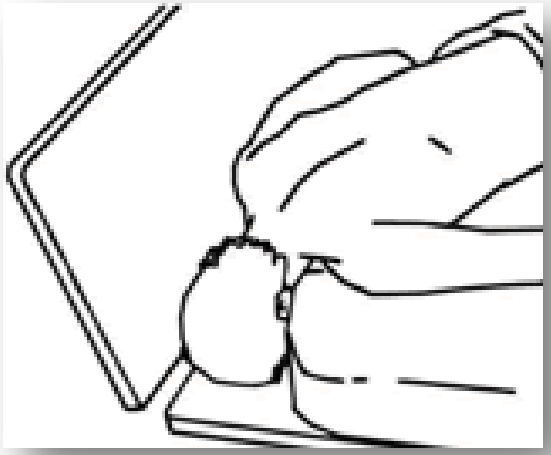
- Where partial length head and foot rails (split rails) are used on the same side of the bed.
- The space between the split rails may present a risk of either neck entrapment or chest entrapment between the rails if a resident attempts to, or accidentally, exits the bed at this location.
- V-shaped opening between the rails may present a risk of entrapment due to wedging.

Zone 6: Between the End of the Rail and the Side Edge of the Head or Foot Board



- The space between the end of the rail and the side edge of the headboard or footboard.
- Any V-shaped opening between the end of the rail and the head or footboard may present a risk of entrapment due to wedging.
- This space may change when raising or lowering the head or foot sections of the bed.

Zone 7: Between the Head or Foot Board and the End of the Mattress



- The space between the inside surface of the head board or foot board and the end of the mattress.
- This space may present a risk of head entrapment when taking into account the mattress compressibility, any shift of the mattress, and degree of play from loosened head or foot boards.

Which zone of entrapment can be mitigated by ensuring the mattress stop at the bottom of the bed deck is engaged?

If you said ZONE 7, you are correct!!

Engaging the mattress stop prevents the mattress from shifting on the bed deck which prevents the gap between the headboard and mattress end from being wide enough to allow a resident's head to become entrapped.

Winnipeg Regional Health Authority
Caring for Health

Office régional de la santé de Winnipeg
À l'écoute de notre santé

History of Bed Rails

1940

Increased use in North America due to:

- Postwar **nursing shortage** (caregiver to "watch" patients)
- Change in law, making hospitals criminally liable for staff
- **Consumer marketing** of safely features of side rails

1950

Side rails promoted as an expression of safe practice

1960's & 70's

Continued use of side rails thought to be the result of **a nursing shortage** and the creation of semi-private and private accommodations

1980

Side rail use is common practice in North America. **Increasing deaths and injuries** from use and misuse lead to legal action against hospitals and staff.

1990's

Side rail use is first described as a physical restraint. **Questioning of side rails as best practice.**

Florence Nightingale didn't use side rails!

Understanding the Risk

- Between 1980 and April 2006, Health Canada received 51 incidents of life threatening bed entrapments in Canada, 26 of which led to deaths.

- Between January 2003 to September 2012 in the US, 175 deaths and 39,600 injuries occurred mostly due entrapment and suffocation.

Understanding the Risk

- Entrapment events account for almost one fifth (18.3 %) of all types of reported bed use problems, and account for 63% of bed use related deaths.
- There is an incident reported almost every 3 months in Canada where an entrapment or rail latch failure occurs. Since device incidents generally tend to be under-reported, the number of actual entrapment deaths is likely much higher.

Although the occurrence of entrapment events is rare, when they do occur, the outcome can be fatal yet is often preventable!

Who is at risk?

People who have problems with memory, sleeping, incontinence, pain or who get out of the bed and walk unsafely without assistance, are at highest risk for entrapment within bed (aka side) rails.

Which of the following is true?

- ❑ Older people "fall out of bed"
- ❑ "Residents don't mind side rails"
- ❑ Restraints reduce legal liability; "Residents can't refuse"
- ❑ Side rail use saves time and are most appropriate when residents can't be closely monitored
- ❑ None of the above

MYTH

TRUTH

1. Older people do not fall out of bed like toddlers, they fall trying to get out of bed to meet a need (such as going to the bathroom, getting a drink of water etc.)

2. Residents **do** mind bed rails. Research has shown that bed rails and any form of physical restraint have an impact on residents – often lasting weeks to months to years

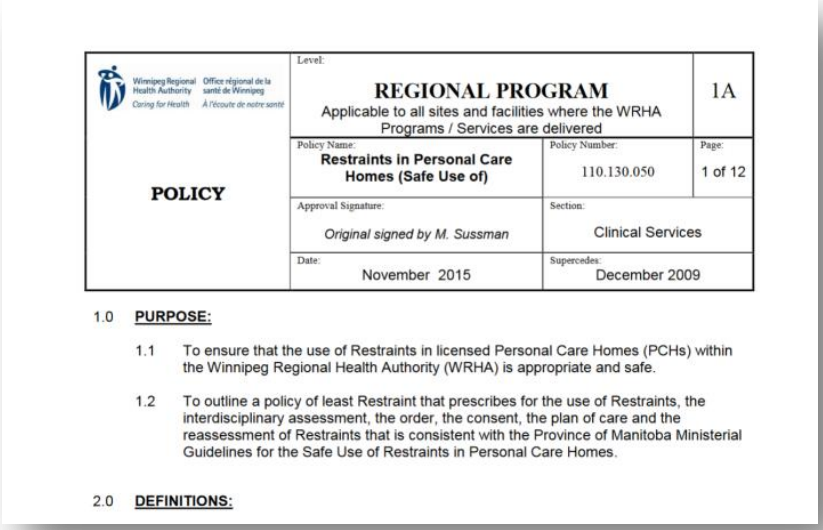
3. Residents can refuse the use of bed rails /restraints---Resident or substitute decision maker consent must always be pursued.

4. Restraining a resident actually takes more time than not restraining because more frequent checks must be done and documented.

Are Bedrails Restraints?

Bed rails may be considered a physical restraint and their use must comply with the policy on restraints

Policy # 110.130.050 ***Restraints in Personal Care Homes (Safe Use of)***



Winnipeg Regional Health Authority — Caring for Health
Office régional de la santé de Winnipeg — À l'écoute de notre santé

Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg Caring for Health / À l'écoute de notre santé	Level: **REGIONAL PROGRAM** Applicable to all sites and facilities where the WRHA Programs / Services are delivered	1A
POLICY	Policy Name: **Restraints in Personal Care Homes (Safe Use of)**	Policy Number: 110.130.050 / Page: 1 of 12
	Approval Signature: *Original signed by M. Sussman*	Section: Clinical Services
	Date: November 2015	Supercedes: December 2009

1.0 **PURPOSE:**

1.1 To ensure that the use of Restraints in licensed Personal Care Homes (PCHs) within the Winnipeg Regional Health Authority (WRHA) is appropriate and safe.

1.2 To outline a policy of least Restraint that prescribes for the use of Restraints, the interdisciplinary assessment, the order, the consent, the plan of care and the reassessment of Restraints that is consistent with the Province of Manitoba Ministerial Guidelines for the Safe Use of Restraints in Personal Care Homes.

2.0 **DEFINITIONS:**

Are Bedrails Restraints?

Physical or Mechanical Restraint: Devices that the individual cannot remove at will and which restrict freedom of movement. This includes, but is not limited to:

- two full or three-quarter bed rails in the up position;
- one full or three-quarter bed rail in the up position on a bed when the other side of the bed is against a wall;

RESEARCH

Studies on bed rail use have shown:

- Bilateral full-length side rail use did **not** reduce the risk of falls or recurrent falls

Side rail use and bed-related outcomes among Nursing home Residents
Capzuti, E & Strumpf, N (2002)

- Cognitively impaired people view bed rails as a barrier to exiting, choosing to either go around, over the end or over top the rails, thus increasing the likelihood of an **injurious fall** and possible **entrapment** or **death**

Older People Falling Out of Bed: Restraint, Risk and Safety
Hughes, R (2008)

RESEARCH

Bed rail use has been corre
adverse outcom
injuri
i
as
falls from bed

Conclusion:

Bed rail use, as a standard of care, is not supported by evidence

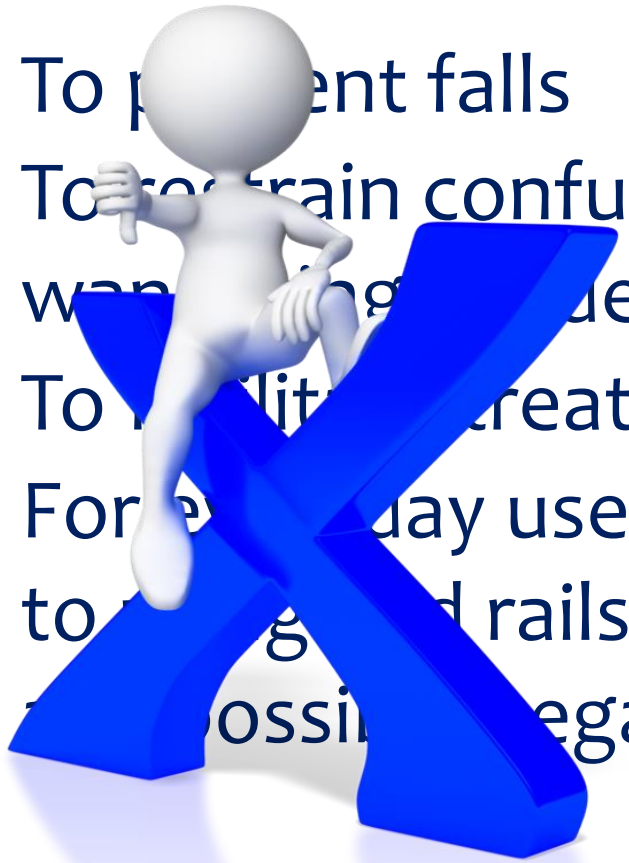
Bedrai should nurses make 'safe and sound' decisions surrounding their use? Shanahan, D (2011)

Alternatives to Bed Rails

When care planning, consider the following Alternatives based on individual assessment and needs of the resident:

- Lower the bed to the most appropriate height for the resident (with wheels locked)
- Consider a bed that lowers to the floor
- Mobility aid close by/ call bell within reach
- Fall mat(s) on floor
- Hip protectors

Which of the following is an acceptable use of bed rails?



- To p ent falls
- To r rain confused, "aggressive" or w g dents
- To l treatment (i.e. maintain bedrest)
- For e day use as there are no alternatives to g d rails and the benefit outweighs p ossi egative outcomes

Risks of Bed Rail Use

- Increase in incidence/severity of injury (strangling, suffocating, bodily injury) and/or *death*
- Increases the distance a resident falls from the bed resulting in more serious injury
- Functional decline –residents who are able to get out of bed are prevented from performing routine activities e.g. going to the bathroom or retrieving something from a closet

Risks of Bed Rail Use

- Worsening responsive behaviors/confusion
- Loss of dignity/freedom, decreased quality of life
- Emotional distress: humiliation, anger, hopelessness
- Separation of caregiver from care receiver
- Potential increase in incontinence, pressure injuries, pneumonia, deep vein thrombosis

Benefits of Bed Rail Use

- Aids in turning and repositioning in bed
- Provides a hand-hold for getting in/out of bed
- Provides a feeling of comfort and security *(for some)*
- Reduces risk of residents falling out of bed **during transport** only
- Provides easy access to bed controls

Using Bed Rails Safely

To determine whether bed rails should be used, an individualized assessment is required.

The following are important to include:

- Ask resident's preference for side rails
- Consider reason for side rail use
- Resident's history of falls/falls risk assessment
- Mental status/patterns of behaviour/delirium
- Level of mobility / transferring ability

*If it is determined bed rail should not be used – removing the bed rail is not recommended unless an inventory tracking system is in place to reunite the rail and the bed as required.

Using Bed Rails Safely: **Assessment**

- Urinary and GI function (assess continence, toileting routine, use WRHA Targeted Surveillance Definitions to rule out infection)
- Sleep patterns (sleepwalking)
- Review of medications (e.g., sedatives, diuretics) and blood work
- Disease pathology (e.g., pain)
- Type of mattress (specialized/slippery)

Using Bed Rails Safely: **Assessment**

- When used as a restraint, bed rails can pose the same risk to resident safety as other types of physical restraints
- Decision to use or to discontinue the use of a bed rail should be made in the context of an individual resident assessment using an **interdisciplinary team with input from the resident and family**

"The restriction of a person's freedom is a denial of that person's basic rights… and must be undertaken only after serious consideration has been given to all other possible alternatives"

-Canadian Nurses Protective Society (CNPS)

Liability & Bed Rails

The **CNPS** recommends:

- Policies and procedures with the emphasis on;
  - ✓Assessment
  - ✓Alternative Interventions
  - ✓Consent
  - ✓Monitoring
  - ✓Professional Standards
  - ✓Legislation
  - ✓Documentation

Summary

- Bed rails should not be used routinely and use should only be based on individual assessment and needs of the resident
- Bed rail use can create extra hazards for residents – consider alternatives
- There are specific situations where the benefits of bedrail use outweigh the potential risks
- Bed rail use should be reviewed on a regular basis
- When risk outweighs benefit - Removal of bed rails is not recommended unless there is an inventory tracking system in place to reunite the bed and rail should the need arise

MODULE Two

Bed System Testing

Bed System Safety

- Evaluating the dimensional limits of the gaps in hospital beds is *one component* of an overall assessment and mitigation strategy to reduce entrapment.
- Results of bed testing need to be documented

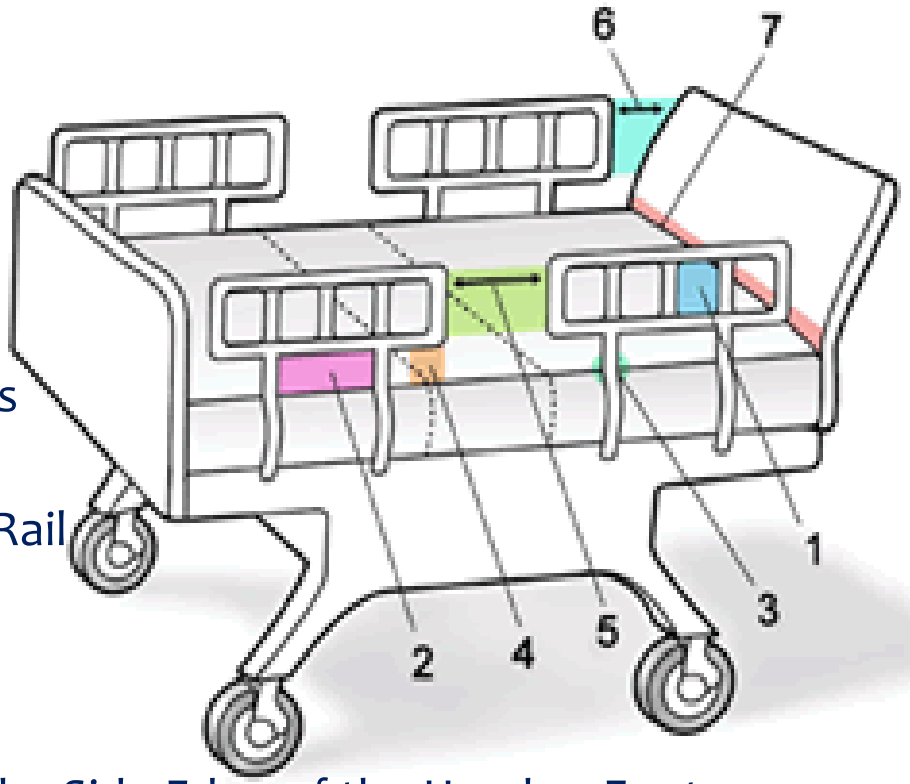
Zone 1: Within the Rail

Zone 2: Under the Rail, Between the Rail Supports or Next to a Single Rail Support

Zone 3: Between the Rail and the Mattress

Zone 4: Under the Rail at the Ends of the Rail

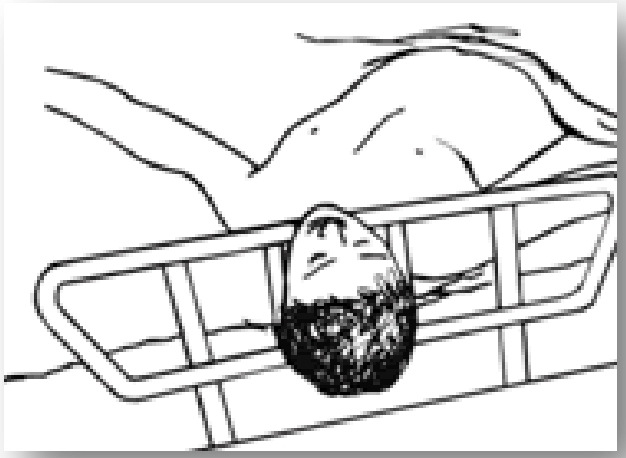
Zone 5: Between Split Bed Rails



Zone 6: Between the End of the Rail and the Side Edge of the Head or Foot Board

Zone 7: Between the Head or Foot Board and the Mattress End

Zone 1: Within the Rail



- Any open space within the perimeter of the rail.
- Openings in the rail should be small enough to prevent the head from entering.
  - A loosened bar or rail can change the size of the space.

Zone 1 Testing

- The goal of the Zone 1 test is to see if someone could become trapped by putting their head through an opening in the rail itself.
- If the large end of the cone does not enter any of the openings, this space passes the test.

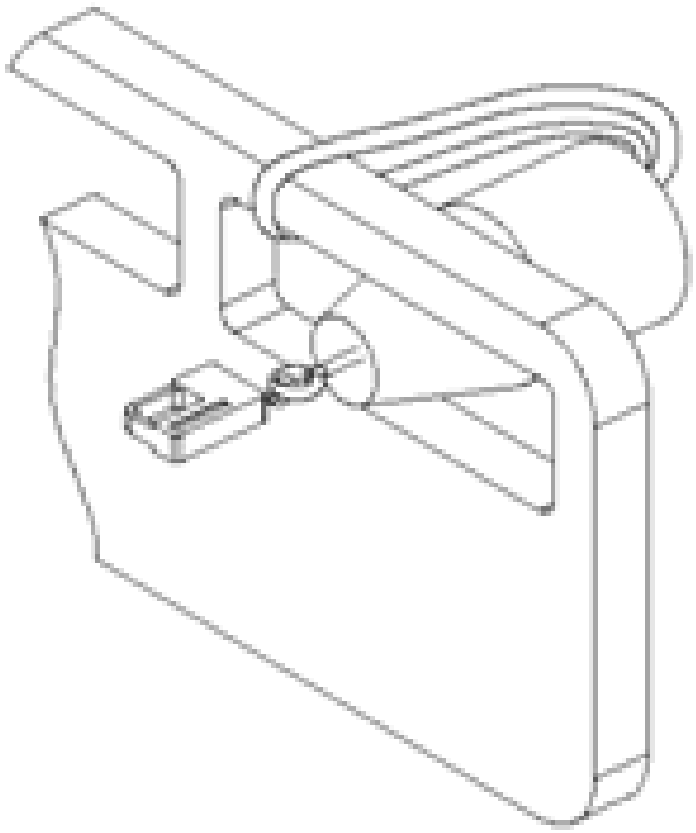
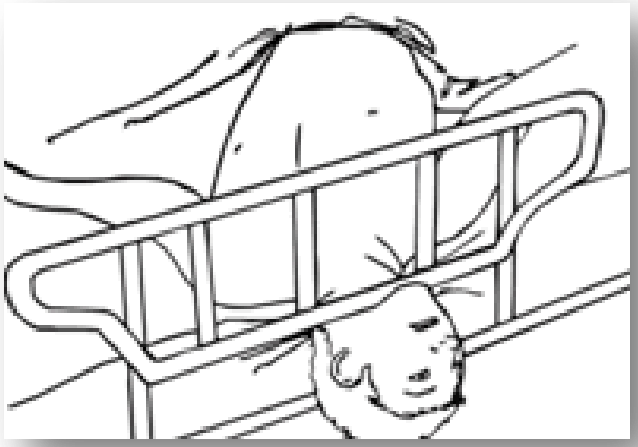


Figure 8. Zone 1 test

Zone 2: Under the Rail, Between the Rail Supports or Next to a Single Rail Support



- gap under the rail between a mattress compressed by the weight of a resident's head and the bottom edge of the rail

Zone 2 Testing

- The goal of the Zone 2 test is to see is someone could become trapped by putting their ***head under*** the rail, head first, between the rail supports (or next to a single support).
- If the large end of the cone **does not** enter the space under the rail, or pass under the rail, this space **passes** the test

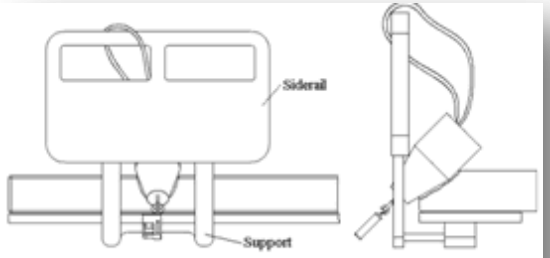


Figure 10a. Zone 2 test between rail supports.

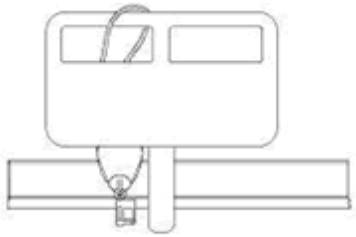


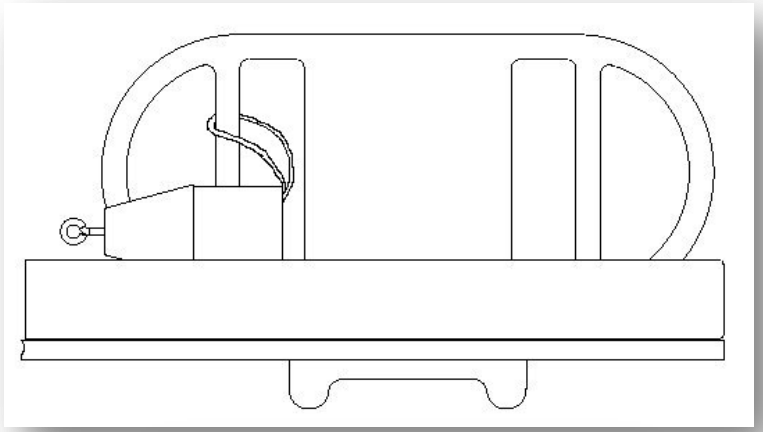
Figure 10b. Zone 2 test for a single rail support.

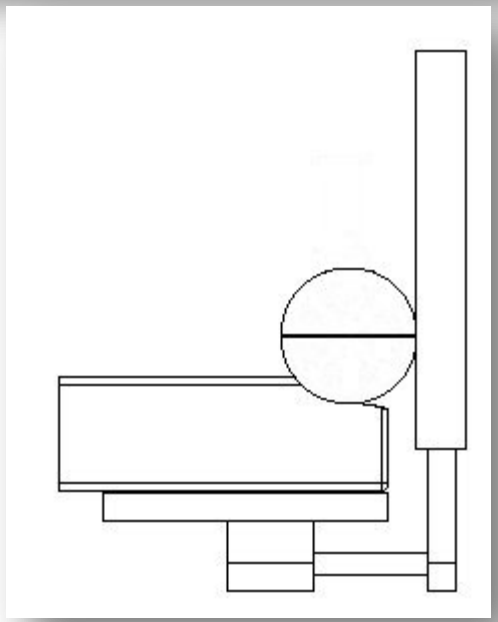
Zone 3: Between the Rail and the Mattress

- The space between the inside surface of the rail and the mattress compressed by the weight of a resident's head.
- This space should be small enough to prevent head entrapment when taking into account the mattress compressibility, any lateral shift of the mattress or rail, and degree of play from loosened rails.

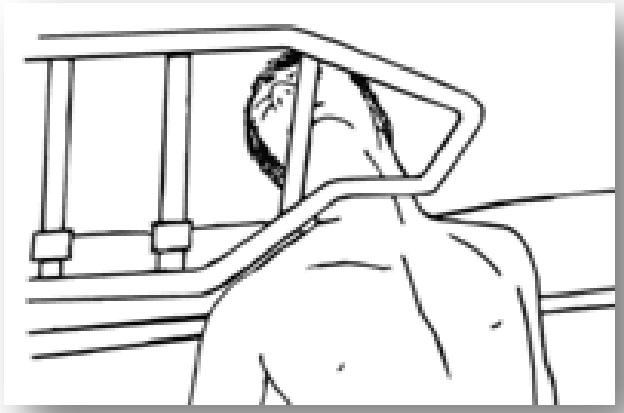
Zone 3 Testing

- The goal of the Zone 3 test is to see whether someone could become trapped with their ***head in the horizontal space between*** the rail and the mattress.
- If the line across the flat end of the cone is above the surface of the mattress, the space passes the test





Zone 4: Under the Rail at the Ends of the Rail



- The gap that forms between the mattress compressed by the resident, and the lowermost portion of the rail, at the end of the rail.
- The space poses a risk for entrapment of a patient's neck. It may change with different rail height positions and as the head or foot sections of the bed are raised and lowered. Thus, in some positions, the potential for entrapment in this zone may still exist when the deck is articulated.

Zone 4 Testing

- The goal of the Zone 4 test is to see whether someone could become trapped by sliding or wedging their neck under the end of the rail.
- If the cylinder touches the rail in the green area, the space passes.

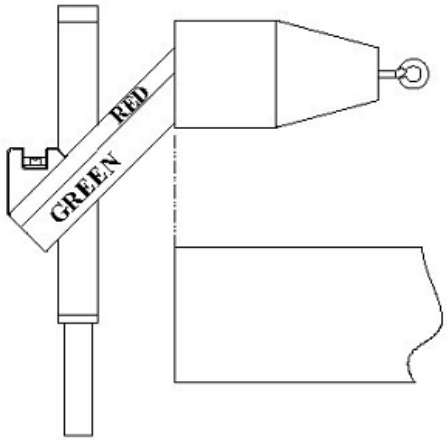


Figure 15a. Align cone with edge and rest on mattress.

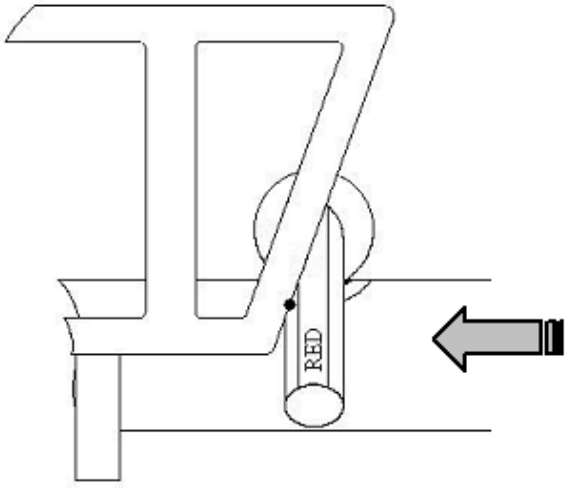
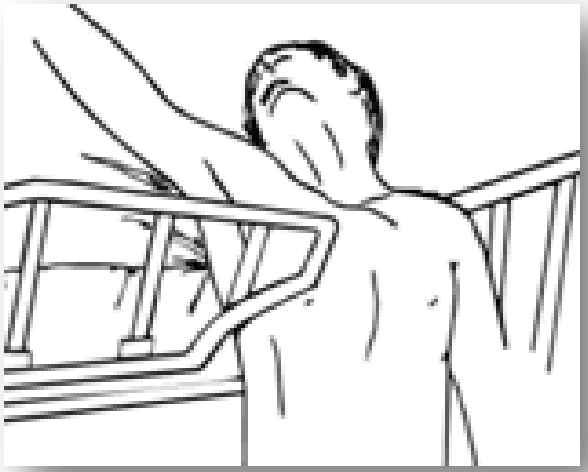


Figure 15b. Slide the tool towards the rail until it makes contact.

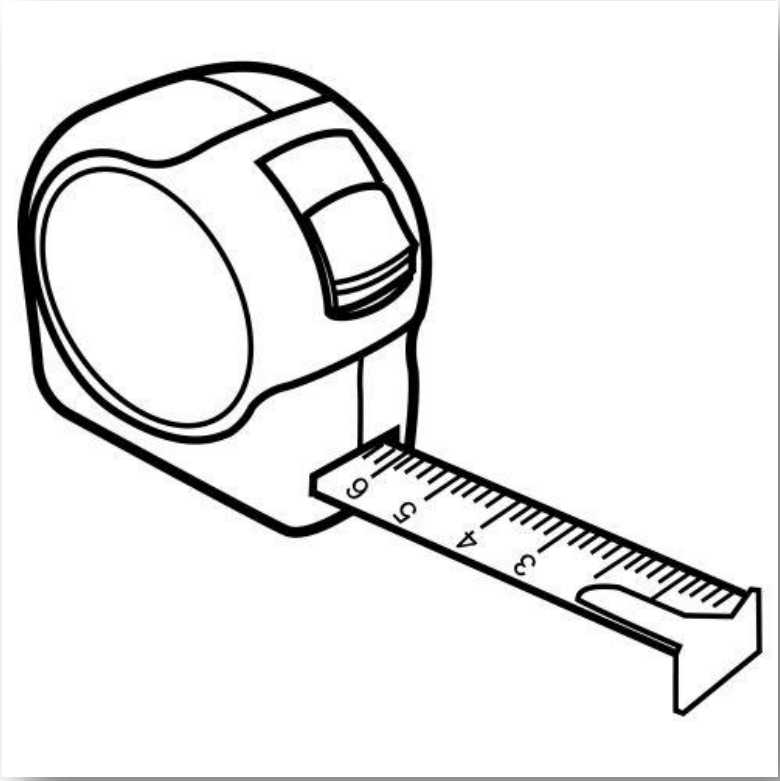
Zone 5: Between Split Bed Rails



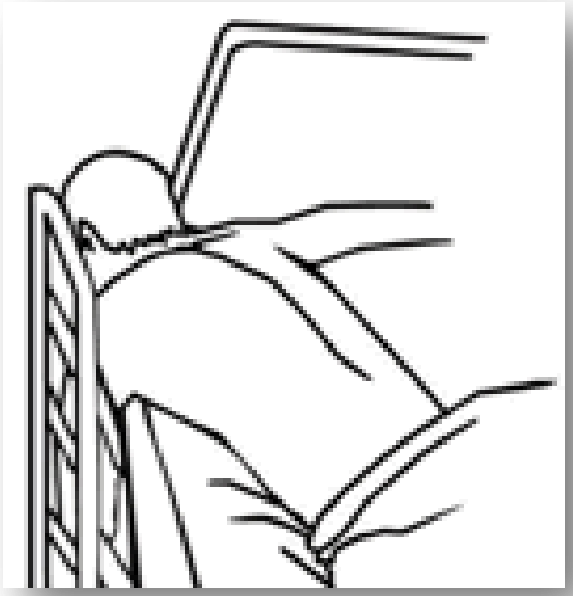
- Where partial length head and foot side rails (split rails) are used on the same side of the bed.
- The space between the split rails may present a risk of either neck entrapment or chest entrapment between the rails if a resident attempts to, or accidentally, exits the bed at this location.
- Any V-shaped opening between the rails may present a risk of entrapment due to wedging.

Zone 5 Testing

- The goal of the Zone 5 test is to see whether someone's neck or chest could become trapped when attempting to exit the bed between split rails
- Measure the gap to ensure it is less than 60 mm (2.375") or greater than 318mm (12.5")



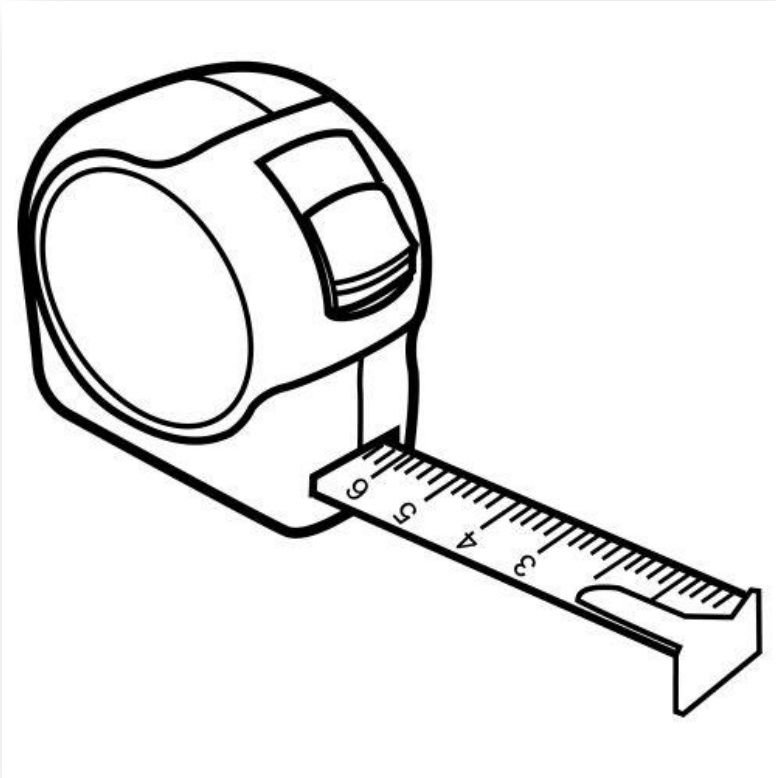
Zone 6: Between the End of the Rail and the Side Edge of the Head or Foot Board



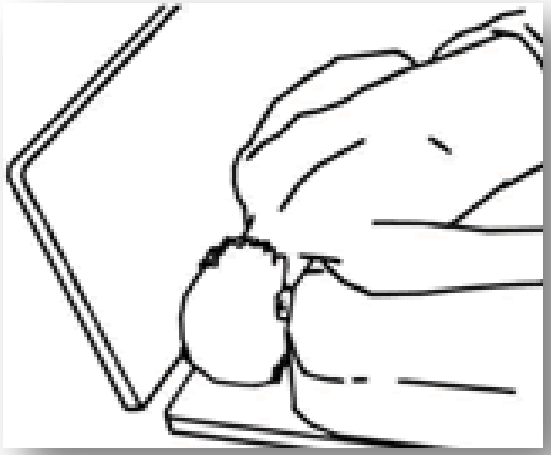
- The space between the end of the rail and the side edge of the headboard or footboard.
- Any V-shaped opening between the end of the rail and the head or footboard may present a risk of entrapment due to wedging.
- This space may change when raising or lowering the head or foot sections of the bed, thus the potential for entrapment may exist when the deck is articulated.

Zone 6 Testing

- The goal of the Zone 6 test is to see whether someone's neck or chest could become trapped between the end of the rail and the head or foot board
- Measure the gap to ensure it is less than 60 mm (2.375") or greater than 318mm (12.5")



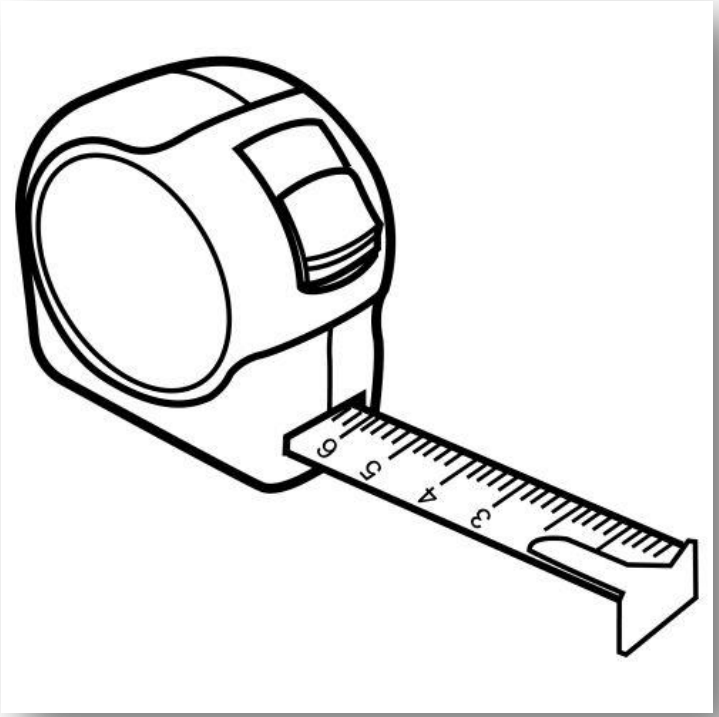
Zone 7 - Between the Head or Foot Board and the End of the Mattress



- The space between the inside surface of the head board or foot board and the end of the mattress.
- This space may present a risk of head entrapment when taking into account the mattress compressibility, any shift of the mattress, and degree of play from loosened head or foot boards.

Zone 7 Testing

- The goal of the Zone 7 test is to see whether someone's head could become trapped between the end of the head or foot board and the mattress.
- **This zone must be tested even if side rails are not in use.**
- Measure the gap to ensure the space is less than 120mm (4.75")



When a zone fails:

ZONE(S)	POSSIBLE RESOLUTION/MITIGATION
2, 3, 4, 7	• Replace mattress if current one is not of optimal length, width and depth for bed deck, frame and rails.
1, 4, 7	• Gap Fillers: bed rail inserts, stuff pads, slip-on covers
1, 4, 5, 6	• Rail bumper wedges, rail pads
1, 2, 3, 4, 5, 6	• Rail covers, entrapment shields
1, 2, 3, 4, 5	• Disable use of rail (e.g., tie wrap rail so it cannot be used) or remove • Use of a low bed and adjacent fall mat on the floor when side rail has been disabled/removed • Use of a bed alarm when side rail has been disabled removed • Use of mobility accessories (e.g. transfer pole or trapeze bar) when side rail has been disabled or removed

Please refer to the handouts for detailed instructions on how to perform tests on zones 1 through 4.

Resources/References

- U.S. Food and Drug Administration. Hospital Bed System Dimensional and Assessment Guidance to Reduce Entrapment, March 19, 2006 available at: http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm072662.htm
- Health Canada. Adult Hospital Beds: Patient Entrapment Hazards, Side Rail Latching Reliability, and Other Hazards, Effective date: 2008/03/17 available at: http://www.hc-sc.gc.ca/dhp-mps/md-im/applic-demande/guide-ld/md_gd_beds_im_ld_lits-eng.php
- Hospital Bed Safety Workgroup. A Guide for Modifying Bed Systems and Using Accessories to Reduce the Risk of Entrapment, June 21, 2006.
- Region of Peel Long Term Care Centres. Bed Entrapment Prevention Program, April 2013.