

Massachusetts Department of Developmental Services Risk Management

Subject: Bed Rail Entrapment

What is it?

Entrapment is defined as an event in which an individual is caught, trapped or entangled in the spaces in or about the bed rail, mattress or bed frame.

What risk does it present?

Entrapment can result in serious injury or death. All reported deaths involved entrapment of the head, neck, or thorax, while most injuries involved fractures, cuts, and abrasions to the extremities. The majority of the deaths and injuries involved elderly patients or frail adults. Individuals at high risk for entrapment include those with pre-existing conditions such as confusion, restlessness, lack of muscle control, or a combination of these factors.

How is it managed?

The FDA recommends the following actions to prevent deaths and injuries from entrapment in bed side rails:

- Inspect all bed frames, bed side rails, and mattresses as part of a regular maintenance program to identify areas of possible entrapment. Regardless of mattress width, length, and/or depth, alignment of the bed frame, bed side rail, and mattress should leave no gap wide enough to entrap a patient's head or body.

- Be aware that gaps can be created by movement or compression of the mattress which may be caused by patient weight, patient movement, or bed position.

The seven areas in the bed system where there is a potential for entrapment are identified in Figure 1.

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

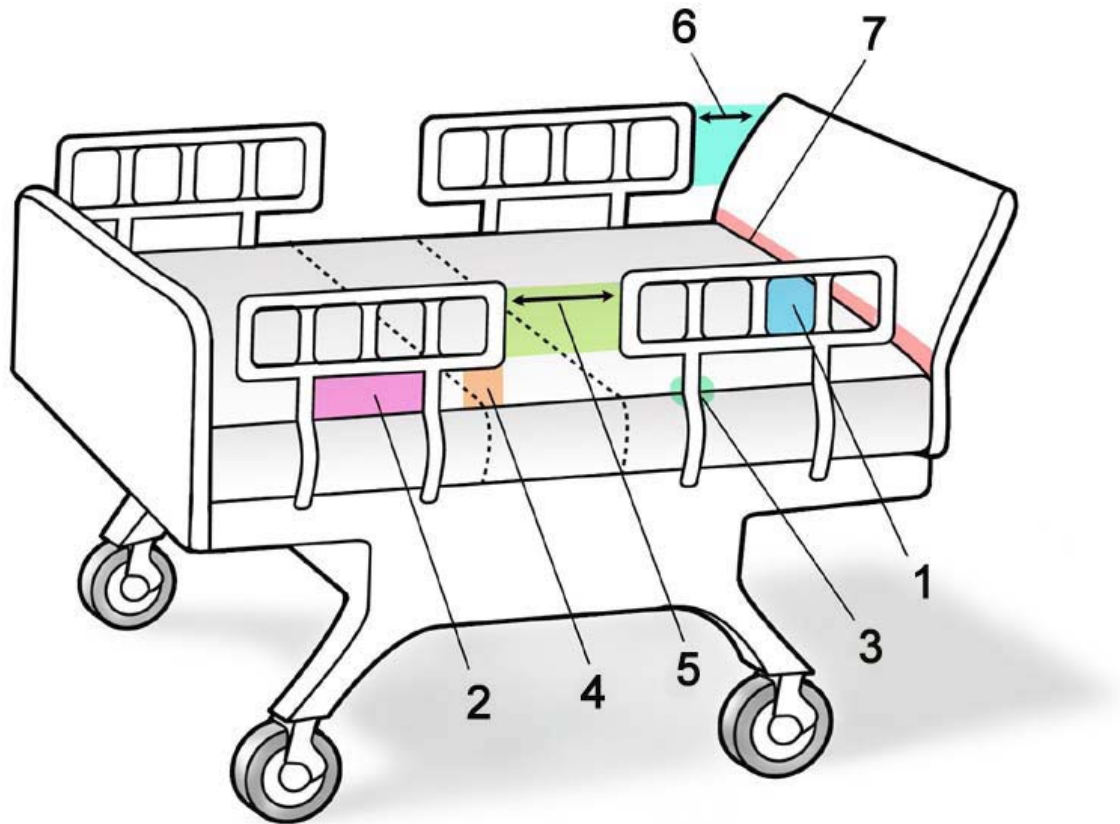
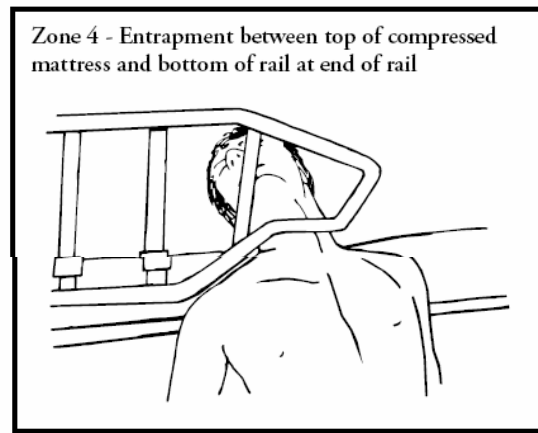
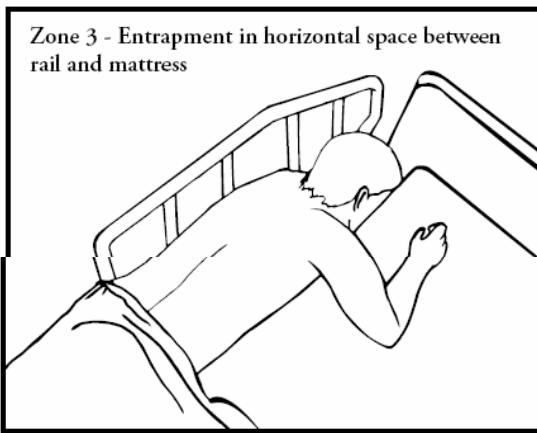
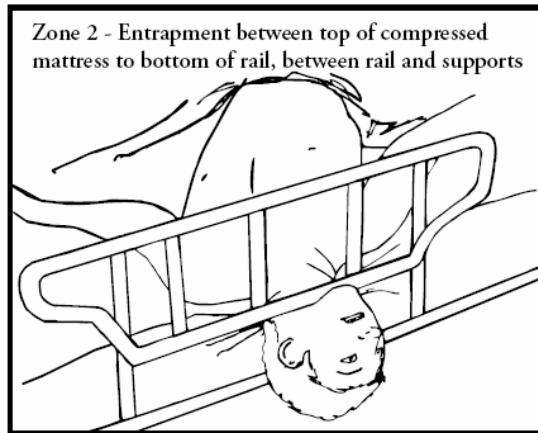
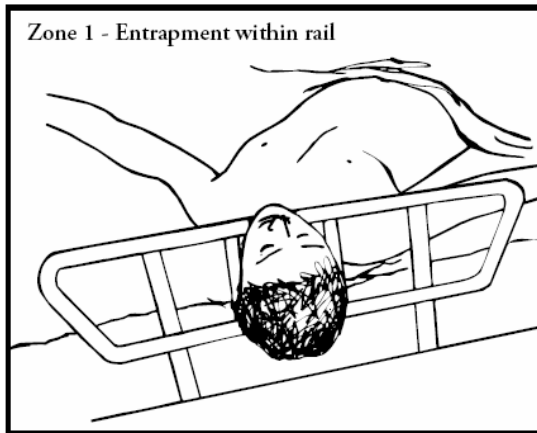


Figure 1

SUMMARY OF ENTRAPMENT ZONES

While recognizing that there are seven potential entrapment zones, entrapment zones 1-4 account for the majority of entrapments and deaths from entrapments. Focusing on these high risk areas allows us to prioritize strategies for decreasing risks. For dimensional limits and test methods for zones 1, 2, 3, 4, refer to FDA Guidance, *Hospital Bed System Dimensional and Assessment Guidance to Reduce Entrapment* (Document issued on: March 10, 2006).



Zones 5, 6 and 7 are not measured zones. These are shown here only for reference for future reporting of entrapment incidents.

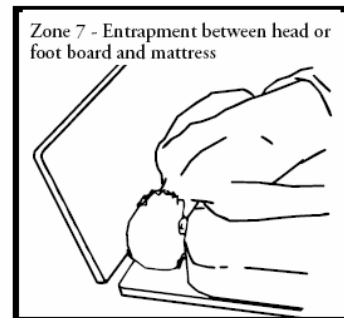
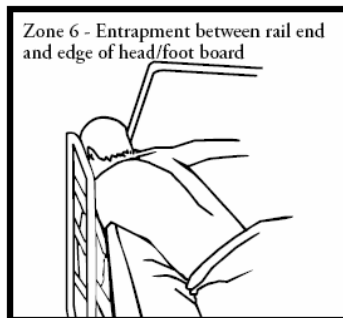
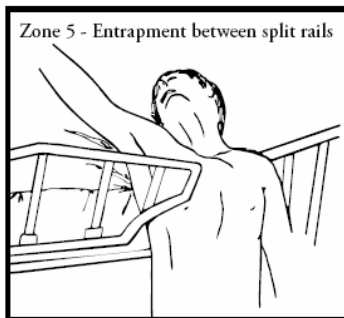


Figure 2

Accessories and Devices that Alter the Openings of Bed Systems	Potential Entrapment Zones Addressed
<u>Mattresses with optimal length, width and depth for bed deck, frame, and bed rails</u>	2, 3 4, 7
<u>Gap Fillers:</u> <ul style="list-style-type: none"> • Bed rail inserts – rigid plastic that inserts into the bed rail openings to narrow the openings. • Stuff pads – Plastic covered pads used to decrease open spaces between bed rails and mattresses, mattresses and head/foot boards. 	1 4, 7
<u>Pads & Wedges</u> <ul style="list-style-type: none"> • Rail bumper wedges – elongated pads that address openings between the mattress and bed rail, and cover the openings in bed rails • Rail pads – elongated pads that address openings between the mattress and bed rail, and cover the openings in bed rails 	1, 4, 5, 6 1, 4, 5, 6
<u>Drapes, Covers and Shields:</u> <ul style="list-style-type: none"> • Rail covers – fabric devices or plastic that slip over the bed rails to close openings. • Entrapment shields – rigid plastic device attached to a bed rail which occludes all openings along the side of the bed 	1, 5, 6 1, 2, 3, 4, 5, 6

Figure 3

Where can I find additional help?

- DDS Procedure Manual
- NIH – www.nih.gov
- CDC – www.cdc.gov
- DPH – www.mass.gov/dph
- DMH – www.mass.gov/dmh
- <http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm072662.htm> *Hospital Bed System Dimensional and Assessment Guidance to Reduce Entrapment* (Document issued on: March 10, 2006). (document number 1537)