Entrapment occurs when the head, neck or chest of a patient/resident becomes caught between the mattress of a bed and its side rails, or within the rails themselves. A review of indemnity payments related to claims alleging bed-rail entrapment between April 1998 and October 2004 revealed that CNA-affiliated underwriting companies paid an average of $283,333. Each case cited death due to strangulation and asphyxiation.

In 2006, federal guidelines aimed at preventing bed entrapments in hospitals, long term care facilities, and home care settings were released. This ALERT Bulletin provides an overview of the guidelines. The focus is on assessing potentially hazardous gaps in bed systems, identifying patients/residents at greatest risk and reporting entrapment events.

Inspecting Beds
The first step is to inspect your facility’s beds in a systematic and well-documented manner. Those beds that present a risk of side-rail entrapment require repair or replacement. Your facility’s safety committee should manage this process, establishing responsibility for goal-setting, training, scheduling assessments, and budgeting for repairs. Ensure that representatives from such areas as risk management, nursing, medical staff, engineering, purchasing, materials management and safety serve on the committee.

According to studies by the Hospital Bed Safety Workgroup, performing initial bed assessments averages 15 minutes per bed. In some cases, more time must be allocated. Be sure to provide bed surveyors with sufficient training and time to complete assessments and discuss with them the following basic strategies:

Focus on danger zones. Surveyors should evaluate the dimensions of any open space between the bed and bed rails to prevent a patient’s/resident’s head, neck or chest from becoming wedged. In addition, mattress inlays should be designed to prevent the possibility of a patient/resident falling between the mattress and bed rail. As a general rule, replace beds, side rails or mattresses whenever gaps greater than five inches are present.

Surveyors should focus on the following seven areas, which are noted as potential zones for bed-rail entrapment by the Food and Drug Administration (FDA), and are illustrated on the FDA’s Web site at http://www.fda.gov/cdrh/beds/guidance/1537.html#8:

1. within the rail
2. under the rail
3. between the rail and the mattress
4. under the rail, at the ends of the rail
5. between split bed rails
6. between the end of the rail and the side edge of the footboard or headboard
7. between the footboard or headboard and the mattress end

Reassess worn beds. Inspect beds whenever they show wear and when accessories and components are added, changed or removed. Regardless of mattress dimensions or the alignment of the bed frame, the bedside rail and mattress should not leave gaps that may entrap a patient’s/resident’s head, neck or chest. Check for possible gaps created by movement or compression of the mattress due to the patient’s/resident’s weight, movement or bed position.

Retro-fit only with compatible components. Attention should be focused on replacement mattresses and side rails. Because not all bed components are interchangeable, confer with the manufacturer regarding compatibility when side rails and mattresses are purchased separately from the bed frame. Be alert to mattress bowing and ensure proper distance between the mattress and footboard and headboard.

Use protective barriers to close off gaps. Before utilizing protective barriers, determine whether the bed manufacturer and your facility’s policy authorize the use of such devices as:

- bed-rail protector pads that provide unobstructed views of the patient/resident
- positioning bars that assist the patient/resident with turning
- bed-rail netting to prevent head, neck or limbs from becoming wedged within the rails
- mattresses with raised foam edges to prevent gaps between mattress and rails
- anti-skid pads on bed frames to prevent mattress movement
- mattress inlays that fill the space between rails and the footboard and headboard

*“Hospital Bed System Dimensional and Assessment Guidance to Reduce Entrapment” was prepared by the Hospital Bed Safety Workgroup in partnership with the Food and Drug Administration. These guidance documents, which are viewed by regulatory authorities and accrediting agencies as representing the “best practice” standards for bed-rail use, are available at www.fda.gov/cdrh/beds/index.html.*
For more information, consult the FDA’s “A Guide for Modifying Bed Systems and Using Accessories to Reduce the Risk of Entrapment,” which is available at www.fda.gov/cdrh/beds/modguide.html.

Assessing Patients/Residents

The use of side rails may or may not be in a patient’s/resident’s best interest. As with any other restraint mechanism, they should be utilized only after scrupulous consideration and with a physician’s written order.

Begin the assessment process by noting any physical or mental conditions that place patients/residents at heightened risk for entrapment, e.g., altered mental status, agitation, lack of muscle control or frequent nocturnal urination. Also observe patients’/residents’ sleep environment (light levels, proximity to toilet, bed height and turning support, etc.), as well as their physical size and weight in relation to their bed model and dimensions.

Other risk factors predisposing patients/residents to entrapment events may include:

- episodes of falling out of bed
- a history of serious bed-related injuries
- inability to ambulate safely to and from the toilet
- inability to transfer safely between bed and wheelchair
- inconsistency in notifying staff of needs
- a previous entrapment or near-entrapment event

To ensure a medically informed decision, staff must include patients/residents and families in their discussions during the treatment-planning process. Such consultations will assist in verifying previous sleep habits and the bed environment.

For additional assistance in assessing entrapment risks, see “Clinical Guidance for the Assessment and Implementation of Bed Rails,” available for downloading at www.fda.gov/cdrh/beds/.

Bed Safety Principles

Ensure that your facility’s bed-safety program incorporates the following safety principles. These strategies also should be shared with staff, physicians, patients/residents, families and ombudsmen.

- Inspect all bed frames, rails, mattresses and accessories as part of a written maintenance program to identify areas of possible entrapment, paying close attention to mattress compression and shrinkage due to cleaning.
- Follow your facility’s protocol regarding indications for and safe use of protective restraints, as simultaneous use of side rails and restraints (including vest, waist, leg and arm) poses a significant risk to patient/resident safety.
- Re-assess the patient’s/resident’s need for bed rails immediately after an entrapment event, as fatal repeat events can occur within minutes.
- Report entrapment events in accordance with your facility’s protocol and in compliance with the federal Safe Medical Devices Act of 1990 (Public Law 101-629). Be sure to sequester the bed for further inspection.
- Securely latch bed rails to prevent them from falling when shaken. Also, lower the foot rail when split rails are in use, if doing so will not heighten the risk of accidents.
- Utilize beds that can be lowered close to the floor in lieu of side rails, and keep these beds in locked position to reduce the risk of falling.

All healthcare facilities have a fundamental duty to provide a safe environment. By thoroughly inspecting beds and rails, and evaluating the benefits and risks of rail use for particular patients/residents, you can better protect them – and your own facility – from the serious risks associated with entrapment.

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