



Fall Injuries and Entrapment – A Major Issue



Facts about fall injuries in Sweden

Sweden is used as an example as the country offer very good healthcare statistics. Fall injuries is however recognized by **WHO** as one the biggest threats to our health globally. Each year close to 70 000 persons fall so badly in Sweden that they need hospital care. That is about 7 of 1000 inhabitants. About 1 000 persons die. 47 000 of those who fall are 65 years of age or older. But with preventive measures, many falls can be avoided.

2.4 % of the population 65 years and older was admitted to hospital because of fall injuries during 2017.

(www.socialstyrelsen.se/fallolyckor, 2019-06-24)

A close-up, slightly blurred photograph of an elderly person's face, showing their forehead and eyes. The person has light-colored hair and is wearing a white garment, possibly a hospital gown or a nurse's uniform. The background is dark and out of focus.

Elderly people fall at hospital and nursing homes

More than 40 % of all hip fractures occurs among persons living at institutions such as nursing homes, even though only 6 % of the elderly live in these institutions.

7-8 % of all hip fractures occurs at hospitals. As elderly people only stay relatively short periods at hospitals, this can be considered a high-risk environment for fractures.

One of the reasons may be that it is persons with **dementia** and bad health that lives at institutions, which leads to a much higher risk both of falls and fractures. When these vulnerable elderly **change environment and are admitted to hospital**, the risk increases further. It is common that elderly persons become **confused in conjunction with acute illness** and when they in addition have to change to a new environment the risk increases. The **new medication** they might get adds to the risk of falling.

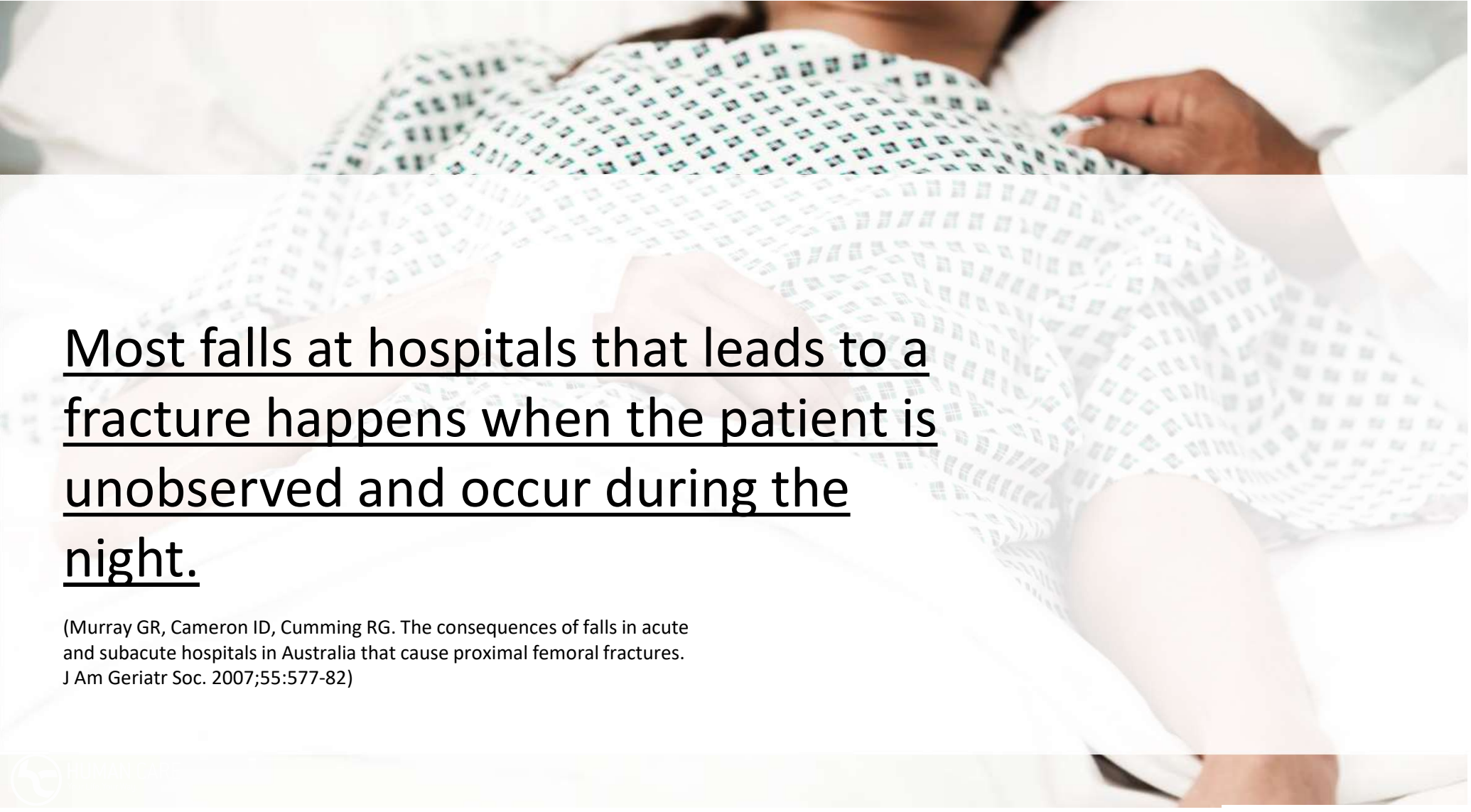
(Fallskador bland äldre - en sammanfattning av en kunskapsöversikt om fallskador, Sveriges kommuner och landsting, 2009)

En stor kostnad

	Antal	Värdering	Totalkostnad
Dödsfall	1 030	35 000 kr	36 Mkr
Svårt skadade	40 700	112 500 kr	4 579 Mkr
Lindrigt skadade	61 000	2 700 kr	165 Mkr
Summa	102 730		4 780 Mkr

”Kommuner och landsting bar nästan hela den direkta kostnaden, 49 procent vardera, för fallolyckorna.”

(Fallolyckor bland äldre – samhällets direkta kostnader, Räddningsverkets, 2005)



Most falls at hospitals that leads to a fracture happens when the patient is unobserved and occur during the night.

(Murray GR, Cameron ID, Cumming RG. The consequences of falls in acute and subacute hospitals in Australia that cause proximal femoral fractures. J Am Geriatr Soc. 2007;55:577-82)



University of Queensland

Entrapment

Side rails can be especially hazardous for demented or agitated individuals, who may be harmed by sliding between the rails or attempting to climb over them.

In general, side rails also impose a risk of injuries due to entrapment which in some cases have had a deadly outcome.

” Since January 1990, FDA has received 102 reports of head and body entrapment incidents involving hospital bed side rails. The 68 deaths, 22 injuries, and 12 entrapments without injury occurred in hospitals, long-term care facilities, and private homes. ”

Alternatives to Preventing Fall Injuries



Use of Side Rails

- **Legislation:** Both individual hospitals and governments have taken actions to legislate against the use of side rails.
- **Entrapment:** Between 1985 and 2013, the FDA received 901 incidents of patients caught, trapped, entangled, or strangled in hospital beds.
- **Psychological impact:** Deprives patients of their dignity and autonomy.

Increase Patient Surveillance

- **Increased cost:**
To be able to monitor patients with fall risks staffing needs to be increased which will lead to increased cost.



Alternatives to Prevent Fall Injuries

Crash Mats

- **Infection control:** To use a mattress on the floor is a bigger risk for infections.
- **Ergonomics for the caregivers:** Inconvenient for the staff since the mat has to be removed when caring for the patient or the nurse needs to lean over it implying a bad working position.
- **Can cause a trip hazard**

Low Beds

- **Remained risk of injury:** Patients who are at risk of falling are not protected from the impact of a fall if the bed only descends to a height of 20 cm (8 inches).

That distance to the floor – although appearing small and harmless – can still lead to serious injuries.

Experience from Australia


The Northern Hospital, Victoria, Australien,
has been working actively with fall
prevention since 2002.

The conclusion they make is that the
number of floor level beds (low-low beds)
corrolates to the results.

(Barker A., Kamar J., Tyndall T. and Hill K. (2013) Reducing serious fall-related injuries in acute hospitals: are low-low beds a critical success factor? Journal of Advanced Nursing 69 (1), 112-121.)



Fall prevention in Australia

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Victoria's hub for health services & business

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Falls prevention in hospital

Key messages

- A combination of strategies is needed to help prevent falls in hospital
- Strategies may focus on the environment, the level of care, the use of
- All strategies should consider the individual patient's health and pers

On this page:

- ↓ Identify falls risk
- ↓ Intentional rounding
- ↓ Low-low beds
- ↓ Bed or chair alarms
- ↓ Non-slip socks
- ↓ For patients with bone conditions
- ↓ For patients with bleeding disorders
- ↓ For surgical patients

Low-low beds

Consider using low-low beds for patients at risk of falling or rolling out of bed. Consult with all team members, considering the following aspects:

- Is the patient at risk of rolling out of bed? Would they benefit from a low-low bed with an adjacent floor mat?
- Is the use of the low-low bed a form of restraint? It may be inappropriate to use a low-low bed for patients who are mobile.
- Does the patient have enough strength to stand up but has poor balance or walking and has risk taking behaviour (such as decreased awareness of ability, perceptual difficulties, delirium, dementia)? A low-low bed may be contraindicated in this case.
- Is the use of a mat next to the bed a trip hazard for staff and other patients/carers?
- The availability of one low-low bed for three standard beds may contribute to a decrease in the rate of serious fall-related injuries¹ whereas providing one low-low bed per 12 beds does not seem to effect rate of falls.²
- Where is the low-low bed placed? If it is close to the wall but there is space between the wall and the bed, this can be a hazard.
- What height is appropriate? For example, low when resting, raise bed for transfers and care activities.

Fall prevention at Växjö Central Hospita, Sweden

- Since 2015 the hospital has been working systematically to prevent different types of falls and reduce risk factors.
- High risk patients are identified and through risk evaluation with Senior alert.
- Most falls occur during the night, and are related to the use of sleeping aids, confusion, anxiety, dementia, reduced number of staff, fewer patients per room observing their peers.
- 6-11 % of the care units patients are normally in need of a ultra low bed.
- The number of falls at the care unit has decreased from 46 to 21 during the period May 1 to Dec. 31, 2015 compared to the same period during 2014.

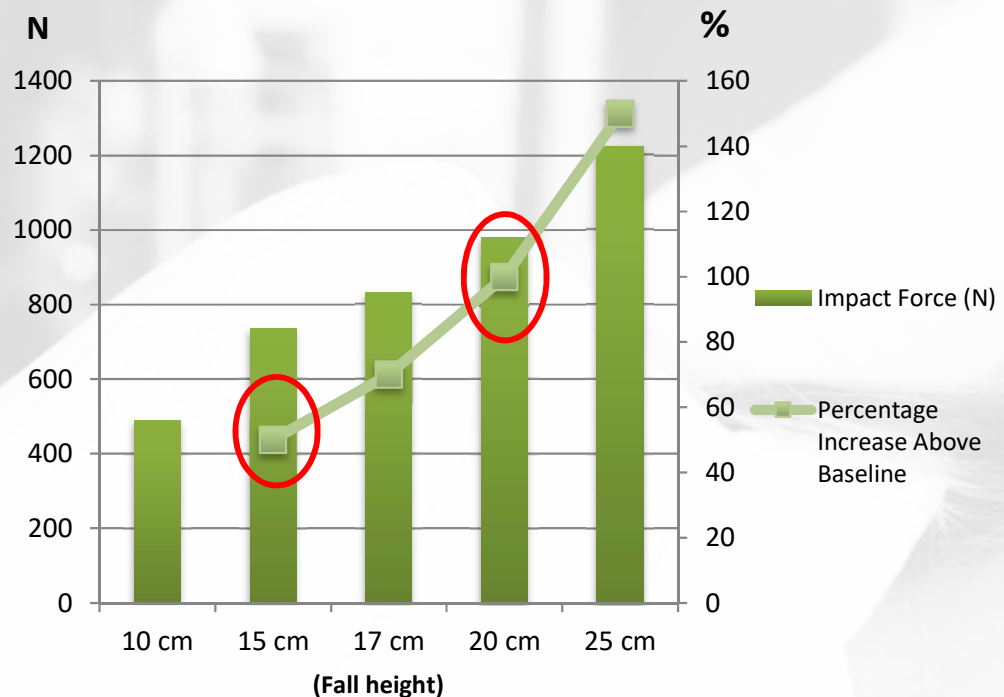
A black and white photograph of a hand holding a measuring tape against a green dog crate. The tape is extended vertically, showing measurements in inches. The text 'Floor Level Beds' is overlaid in large white letters on a green rectangular background that spans the width of the image.

Floor Level Beds

Floor level beds aim to prevent fall injuries without the use of restraints.

These unique beds provide the opportunity of excellent care and save governments and facilities unforeseeable costs.





Impact Force of Falls

By just adding 5 cm, from 10 cm to 15 cm, the impact force is increased by 50%.

Most low beds today have a height of about 20 cm, resulting in a 100% increase of the impact force compared to an floor level bed of 10 cm.

10 cm = Baseline



A Sound Investment

Cost savings thanks to a reduced number of fall injuries

The investment of a single floor level bed is less than the average cost of one fall injury in a hospital environment.

No extra staffing for patient surveillance needed

With a floor level bed the hazardous drop distance is avoided. Subsequently, no extra monitoring of patients with risk of falling is needed, once again resulting in added savings.

Improved Patient Dignity

The use of floor level beds greatly enhance the dignity of care since the use of side rails deprive patients of their dignity and autonomy.

Side rails can lead to feelings of shame, loss of dignity and self-respect, loss of identity, anxiety and aggression, social isolation, and disillusionment.





The Optimal Choice for Challenging Care

- Any in-patient assessed at risk of falling
- Psychiatric/mental health
- Neurological diseases (Stroke, Parkinson's etc.)
- Post-operative anxiety or confusion
- Intoxicated patients

Excellent Working Conditions

A close-up photograph showing a caregiver's hands adjusting a medical device, possibly a blood pressure cuff or a sensor, on a patient's arm. The patient is lying in a bed, and the caregiver is wearing white gloves. The background is blurred, showing a hospital room setting.

The use of height adjustable floor level beds reduces back injuries for caregivers.

No trade off!

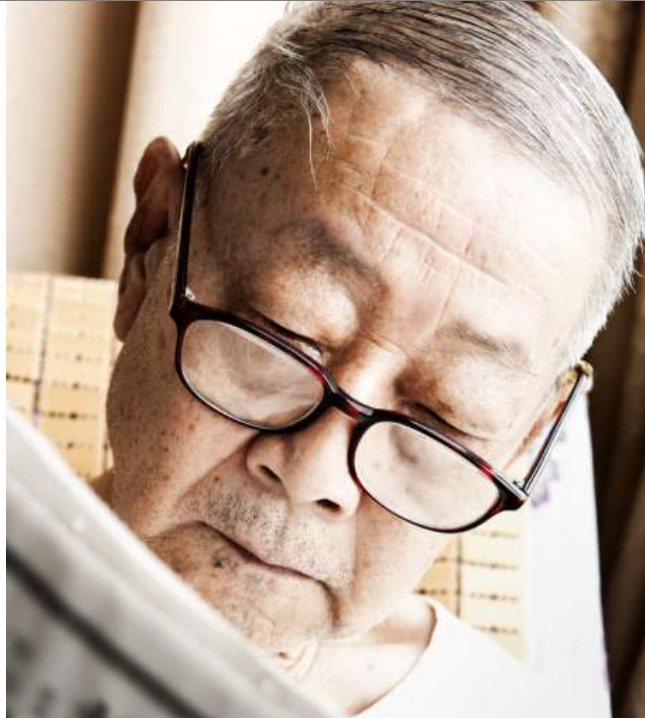
In addition to functioning at a floor level, the floor level beds can also be raised up to 80 cm (31 inches) from the floor, creating an optimum working height that reduces the risk of back injuries for caregivers.

Suitable for Use in Any Environment

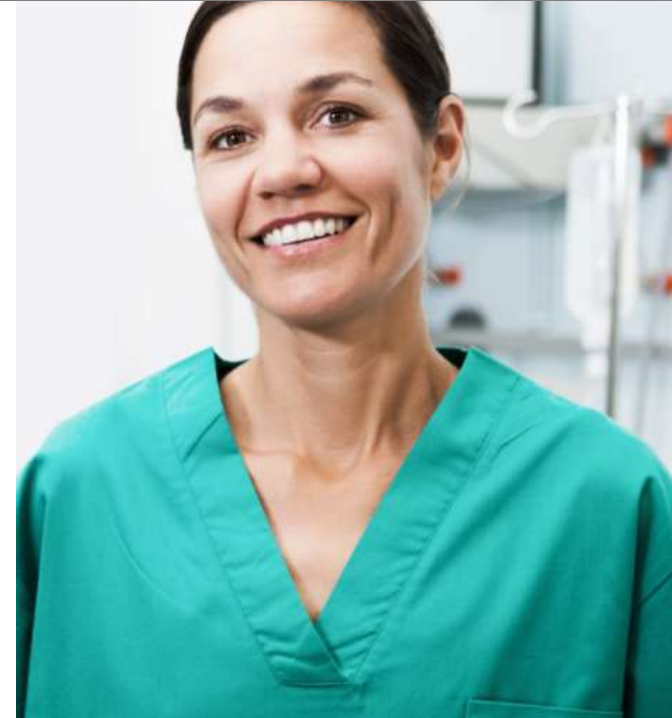
Home Care



Aged Care



Hospital Care



Customer segments

FloorLine LTC



FloorLine-*i*



FloorLine-*i* Plus



Long-term care
Home care

Long-term care
Sub-acute/non-acute hospitals
Palliative care wards

General acute care hospitals
Specialist care
Long-term care/Gerontology

FloorLine-*i* – a sound purchase

- For hospital care and long term care facilities
- Height of 10 cm (3.9”) from the floor
- Minimizes patient restraints and use of side rails



FloorLine-*i*

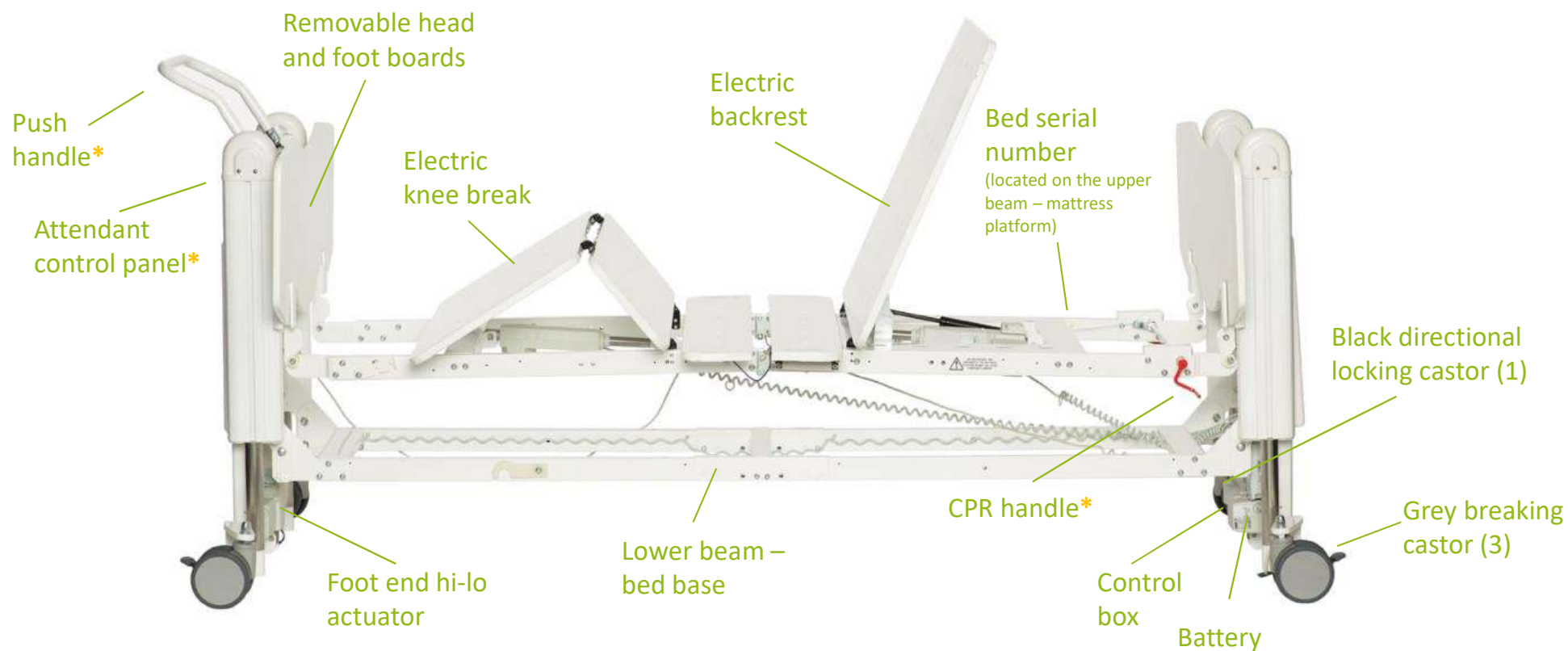
FloorLine-*i* Plus – a complete care management solution

- For hospital environment and acute care
- Minimizes patient restraints and use of side rails
- Height of 10 cm (3.9") from the floor



Regular

FloorLine-*i* and FloorLine-*i* Plus



*FloorLine-*i* Plus only

Bed positions – FloorLine-*i*/FloorLine-*i* Plus

1. Lowest position



10 cm is the difference between rolling and falling out of bed! The FloorLine-*i* and FloorLine-*i* Plus both have a lowest position of 10 cm which prevent fall injuries without the use of restraints.

2. Highest position



No compromises are made for excellent ergonomic working height reaching 80 cm (31,4").

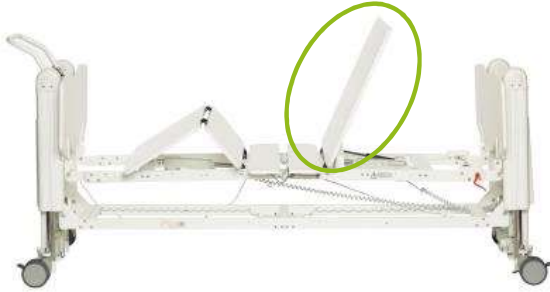
3. Knee break



The knee break is a double mattress panel that splits as it electronically lifts or bends the patient's thigh and calf at the knee, thus combining functionality and comfort for the patient.

Bed positions – FloorLine-i/FloorLine-i Plus

4. Back rest



The backrest is a large mattress panel that raises from a supine position to an upright position, convenient for sitting, which allows a patient to enjoy the flexibility of changing to multiple positions for comfort and health.

5. Trendelenburg/ reversed trendelenburg



The Trendelenburg position (feet up, head down) is an ideal position for postural drainage.

The reverse Trendelenburg position (feet down, head up) provides added pressure relief from various areas of the body.

6. Cardiac chair position



Ideal for recovering cardiac patients who have heart and respiratory illnesses. The bed can be adjusted to form a chair.

This helps to elevate the patient from the waist up, which provides relief to the lungs and circulation, and assists him or her in coming from a fully flat position to a sitting position without causing harm or undue strain.

FloorLine-*i* and FloorLine-*i* Plus – standard features

Patient control handset

The Patient Control Handset permits patients to control and adjust their own bed, to different positions, to suit their changing comfort levels throughout their stay in bed.



Battery back-up

The battery back-up allows for off-mains emergency operation for up to 15 minutes under a normal load.

Auto contour

A Handset (for FloorLine-*i* Plus also attendant control keypad) feature that uses one button to adjust both Backrest & Knee break simultaneously, into a cardiac chair position, even when the bed is in its lowest height position.



Dual wheel castors

125 mm dual wheel castors enable an easy bed maneuverability.



FloorLine-i Plus – unique features

Attendant control key pad with lock out

- Used in addition to the handset to adjust the bed movements.
- Vital for advanced hospital beds where patient positioning must be controlled by medical staff.
- Handset lock out function - allows caregivers to control the bed's positioning operations, limits the patient's control of the bed.



CPR, Emergency Release

- Mechanically: there are two CPR Quick Release Levers, located under either side of the backrest, using these the backrest can be quickly flattened.
- Electrically: CPR button on the Attendant control key pad will quickly flatten the bed into the defined CPR position.



Push handle (optional for FloorLine-i)

- The multi position push handle is fitted to the foot end of the bed to assist caregivers with easy bed maneuverability.



FloorLine-i Plus – unique features

Backlit handset

- Permits patients to control and adjust their own bed, to different positions, to suit their changing comfort levels throughout their stay in bed.
- The soft lighting feature allows a patient the convenience of night-time use, without other lights.



Under bed lighting

- The bed is fitted with two under bed lights located on the under side of the Junction Boxes either side of the bed. Soft illumination around the bed provides extra safety and comfort.
- Controlled using the backlit handset, the lights do not interfere with other patients and eliminate the need for wall-mounted night lights.

Linak digital open-bus control box

- High quality and future proof

FloorLine-*i* and FloorLine-*i* Plus – accessories

Extension kit

The extension kit will lengthen the bed, by 175mm (7 ") to 2175mm (85 1/2 ") to accommodate taller people.



Self help pole

The Self Help Pole is intended to assist a patient moving within the confines of the bed. The working load is 75 kg (165 lbs)



Wall bumper bar

The Wall Bumper Bar protects the head end of the bed. Is fitted to the lower cross beam between the castors.



Care assist rail

Designed to assist patients safely in and out of bed, it is ergonomically designed and low profile to avoid feeling restrained.



Side rails

Human Care refrain from endorsing the use of side rails. We are aware that in some cases, side rails can be beneficial.



IV pole

Adjustable IV Poles can be fitted to both ends of the bed. The bed is fitted with four brackets for IV Poles.



Hanger for air mattress pump

Attachment to hold air mattress pump. To be mounted on the foot end of the bed.



FloorLine LTC – your choice for long term care

- For long term care facilities and home care
- Height of 9,5 cm (3.7") from the floor
- Easy to fold and store efficiently

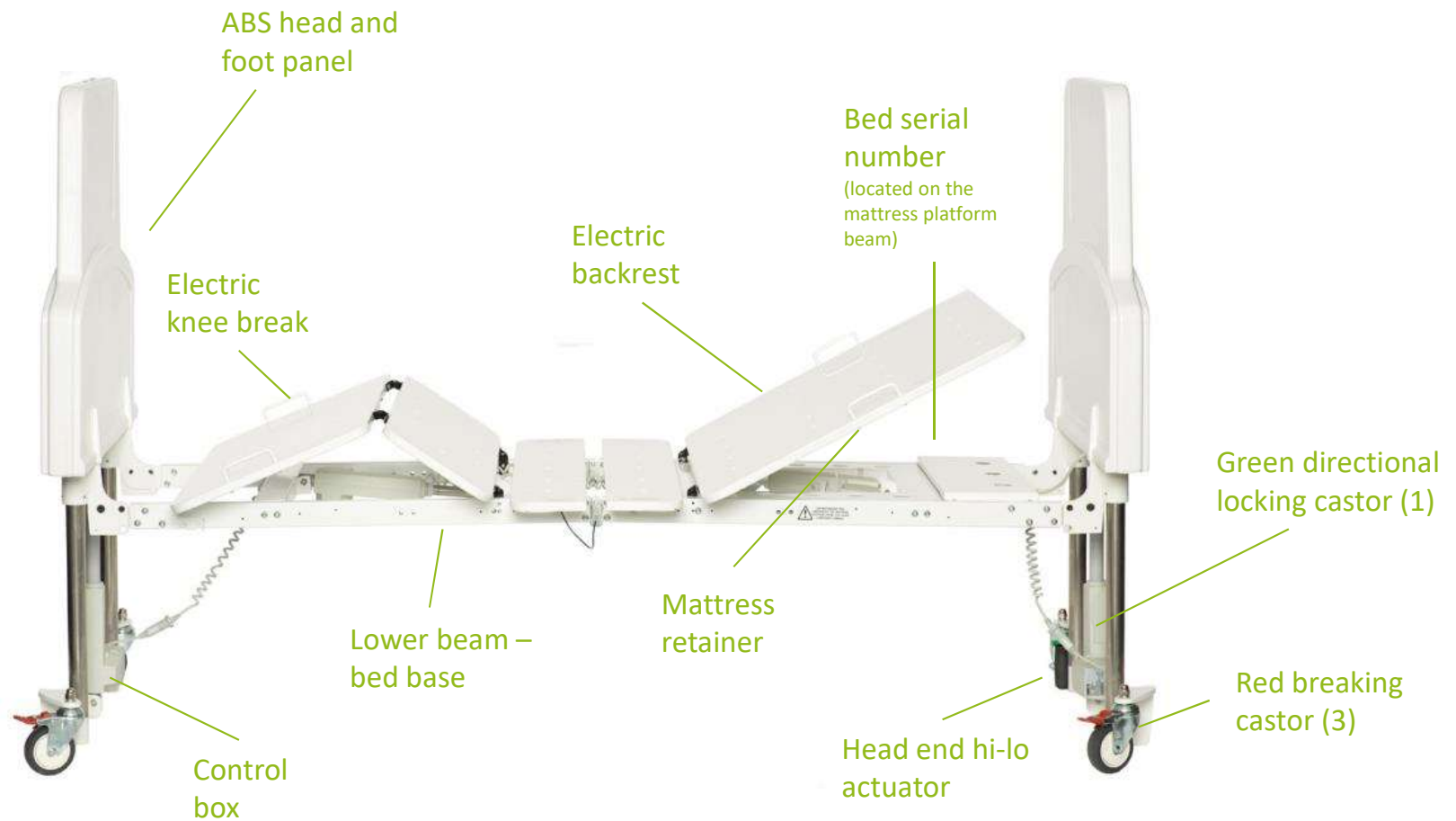


Regular



With wooden end boards

FloorLine LTC



Bed positions – FloorLine LTC

1. Lowest position



10 cm is the difference between rolling and falling out of bed! The FloorLine LTC has a lowest position of 9,5 cm which prevent fall injuries without the use of restraints.

2. Highest position



No compromises are made for excellent ergonomic working height reaching 70 cm (27,5").

3. Knee break



The knee break is a double mattress panel that splits as it electronically lifts or bends the patient's thigh and calf at the knee, thus combining functionality and comfort for the patient.

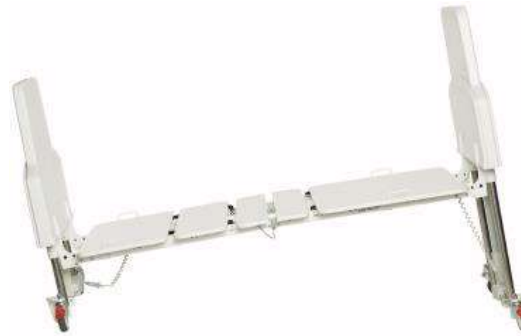
Bed positions – FloorLine LTC

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FloorLine LTC – standard features

Patient control handset

The Patient Control Handset permits patients to control and adjust their own bed, to different positions, to suit their changing comfort levels throughout their stay in bed.



Foldability

The one-piece design makes the FloorLine LTC easy to fold and store away efficiently.



Auto contour

A Handset feature that uses one button to adjust both Backrest & Knee break simultaneously, into a cardiac chair position, even when the bed is in its lowest height position.



Mattress platform and chassis

- Welded steel
- Four panel design
 - Back rest
 - Seat section
 - Double panel knee break



FloorLine LTC – accessories

Extension kit

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Side rail

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Care assist rail

Designed to assist patients safely in and out of bed, it is ergonomically designed and low profile to avoid feeling restrained.



Specifications



	FloorLine- <i>i</i> Plus	FloorLine- <i>i</i>	FloorLine LTC
Platform position	99 - 799 mm / 3.9 - 31.4"	99 - 799 mm / 3.9 - 31.4"	95 - 700 mm / 3.7 – 27.5"
Sleeping dimension	2000 (2175) x 900 mm / 78.7 (85.6) x 35.4 "	2000 (2175) x 900 mm / 78.7 (85.6) x 35.4 "	2000 (2175) x 900 mm / 78.7 (85.5) x 35.5"
Bed dimension	2325 (2500) x 925 mm / 91.5 (98.4) x 36.4 "	2325 (2500) x 925 mm / 91.5 (98.4) x 36.4 "	2150 (2325) x 905 mm / 84.5 (91.5) x 35.5 "
User weight	185 kg / 408 lbs	185 kg / 408 lbs	165 kg / 363 lbs
SWL	250 kg / 551 lbs	250 kg / 551 lbs	200 kg / 440 lbs
Product weight	150 kg / 331 lbs	150 kg / 331 lbs	106 kg / 234 lbs
Wheel Castor Size	125 mm / 5"	125 mm / 5"	100 mm / 4"