Chair Positioning

While the frequency for up-in-chair orders varies with a patient's condition or status, close to 70% of up-in-chair orders written require that the patient be placed in a full chair position at least two times per day. In many situations, low compliance with these orders is common. Issues driving low compliance include staff availability, patient condition, patient comfort, as well as the difficulty associated with the transfer itself. These same factors and conditions make it equally difficult to get the patient back into bed. As a result, some patients are exposed to a sitting position for prolonged periods of time.

Figure 7 *Chair Position*

TotalCare System's revolutionary frame design allows the caregiver ease and flexibility not only in getting the patient to an upright sitting position but back into a flat bed position.

When comparing the TotalCare System's Short Stay or Treatment Surface to geriatric patient chairs in a reclined or upright position, with and without pressure-reducing overlays, interface pressure can be reduced (Figure 8, 9).

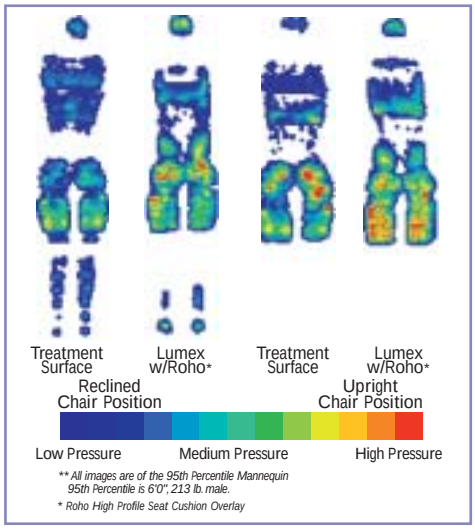


Figure 8 *Interface pressure maps of the TotalCare System Treatment Surface in its reclined and upright chair modes with respect to a geriatric chair with a pressure-reducing overlay.*

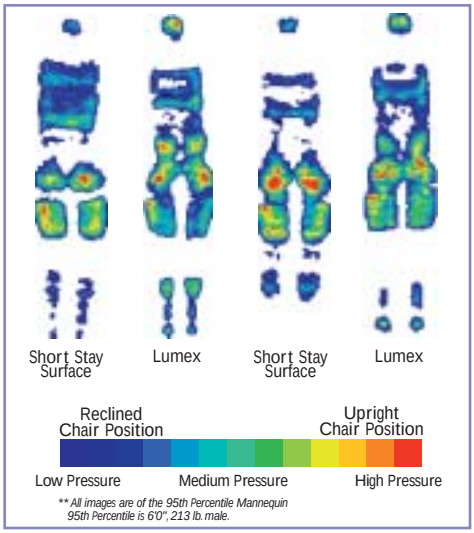


Figure 9 *The TotalCare System Short Stay Surface reduces pressure in the pelvic area when in reclined and when in the egress (upright) chair positions in addition to all bed positions.*

For years beds have been designed utilizing a "Frame Pivot" design. The multiple angles and pivot points of older bed frame and mattress designs cause the patient to gravitate to the foot end of the bed as the head section is articulated. The constant repositioning and downward gravitation of the patient can create shear and friction. The combined effect of TotalCare System's Shearless Pivot frame and surface design in conjunction with the FlexAfoot Retractable Foot minimize patient repositioning.

Figure 10 *Shearless Pivot Patient Position*

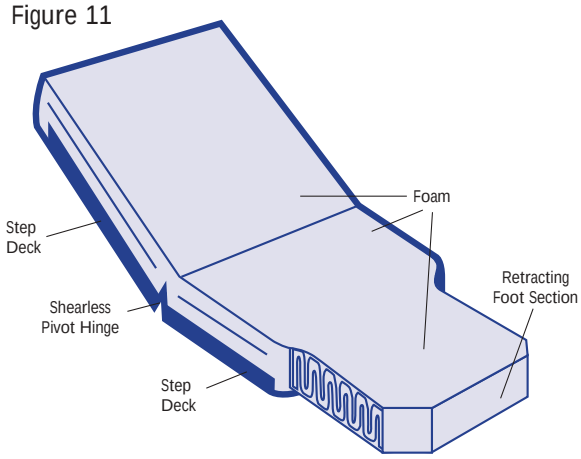
Short Stay Surface

The Short Stay Surface is a pressure reduction surface. This unique design is a modular, three-layer foam support system (Figure 11) that includes a high quality Viscoelastic Core that maximizes pressure reduction. Figure 12 shows the Short Stay Surface compared with the DynamicAire™ Sleep Surface at 0 and 30 degrees for a 6'0", 213 lb. male. In addition, the bed has been designed with perimeter-foam side bolsters which aid the caregiver in keeping the patient positioned in the bed as well as preventing the patient from "bottoming out" when sitting on the edge of the bed. The foot section is covered with an exclusive nylon slip-sheet to maximize comfort and minimize heel shear. Specially designed for TotalCare System's patented frame design, the Short Stay Surface has been designed to articulate with TotalCare System's Shearless Pivot Frame and FlexAfoot Retractable Foot features.

The unique step deck design increases the overall height of the surface under the sacrum by three inches. This additional area optimizes the pressure reduction capability of the surface as well as increases patient comfort.

Both the Short Stay Surface and Treatment Surface have been designed to articulate in conjunction with the bedframe as well as the patient. By moving the pivot of the bed to the top of the surface, the surface works with the frame, minimizing patient gravitation to the foot of the bed, resulting in reductions in skin shearing and friction.

Figure 11



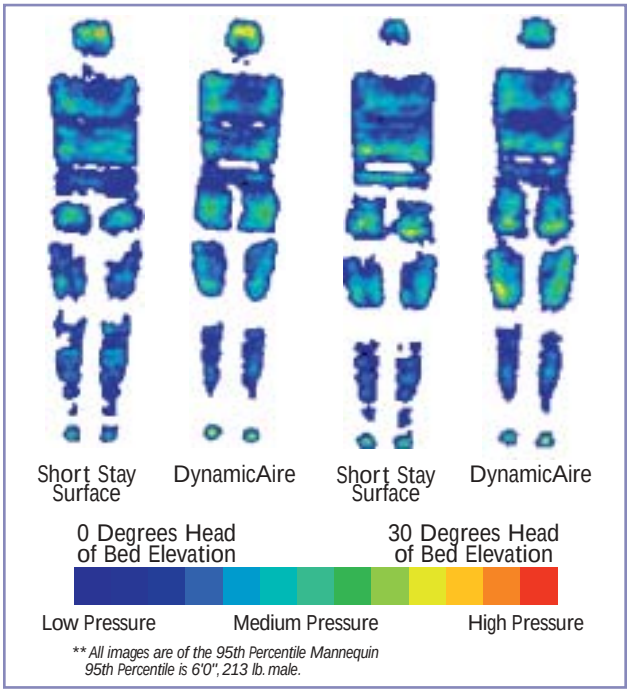


Figure 12 *Full-body interface pressure maps of the TotalCare System Short Stay Surface and DynamicAire Sleep Surface at 0 and 30 degrees head of bed elevations for a 6'0", 213 lb. male.*

NOTE: Interface pressure map images were selected from a larger sample of subjects used to statistically validate product performance and should not be used alone to judge performance or select therapy for any particular patient.

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Sleep Surface
System Performance
Evaluation

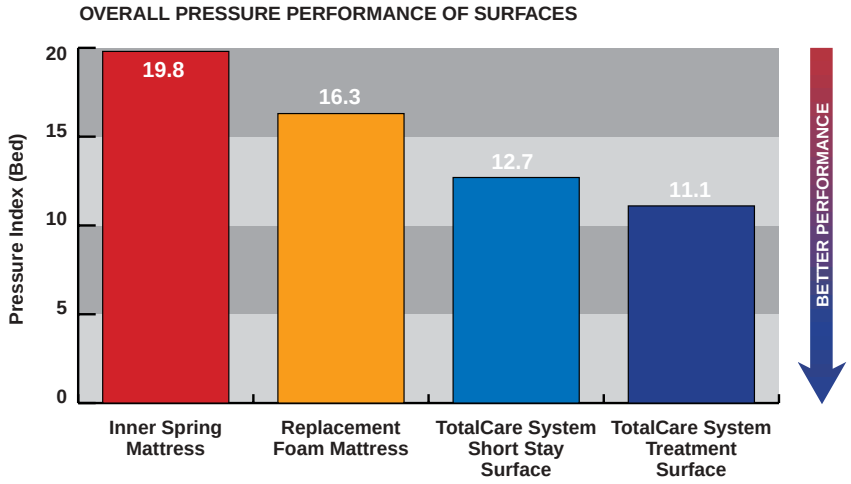
TotalCare™ Bed System Sleep Surface Performance Evaluation

The TotalCare Bed System has been designed with two sleep surface options: Treatment and Short Stay. Both the Treatment and Short Stay Surface offerings have been specially designed to work with the bed's patented Shearless Pivot™ frame, FlexAfoot™ Retractable Foot, and FullChair™ and FullChair™ Egress features. Each surface utilizes a high performance, bi-directional stretch ticking with ultrasonically-sealed seams. The surface is also anti-microbial which prevents penetration of fluid-borne pathogens and microorganisms. The combined effect of the revolutionary frame and surface technology delivers superior cost-effective solutions.

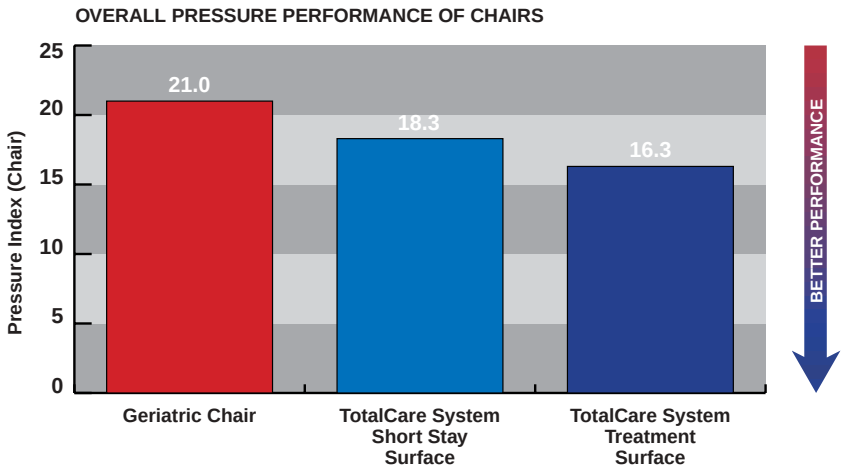
The interface pressure images shown here are for one body type. The overall performance of both surfaces was evaluated using multiple body sizes from 4'10", 94 lbs., to 6'0", 213 lbs., to 5'5", 300 lbs. to reflect the performance for more than 90% of the acute care population. Additionally, the performance of the surfaces for 0 degree head of bed elevation through upright chair mode was evaluated as well[2]. The results shown in Figure 1 illustrate the overall surface performance with respect to several common surfaces.

Figure 1

Bed Performance (0 to 45 Degree Head of Bed Elevation)



Chair Performance (>45 Degree Head of Bed Elevation)



*n=27, ($p<0.01$), Representing 5th, 50th and 95th percentile elderly acute care patients.

Treatment Surface

The Treatment Surface (Figure 2) is a full-body, zoned air surface with perimeter-foam-side bolsters and a nylon slip-sheet foot section with a knitted acrylic and fiberglass fire barrier. When in the Standard mode, the Treatment Surface provides full-body pressure-relieving distribution. Full-body pressure-relieving distribution is continuously active. When the heel suspension mode is activated, additional pressure relief is provided to the heel section.

Standard Mode: The surface provides pressure management by automatically sensing variable load displacement and adjusting the six zones to accommodate any changes in patient weight distribution on the surface.

Heel Suspension Mode: The heel suspension mode is active whenever the FlexAfoot Retractable Foot is adjusted to individual patient size. Full-body pressure-relieving distribution is continuously active while in this mode. Heel relief functions have been shown to be very effective at reducing the prevalence of heel ulcers[1].

Max Inflate: The entire surface becomes firm to facilitate easier patient handling, including repositioning, egress, transfers and procedures. This mode is automatically activated when CPR Release is activated.

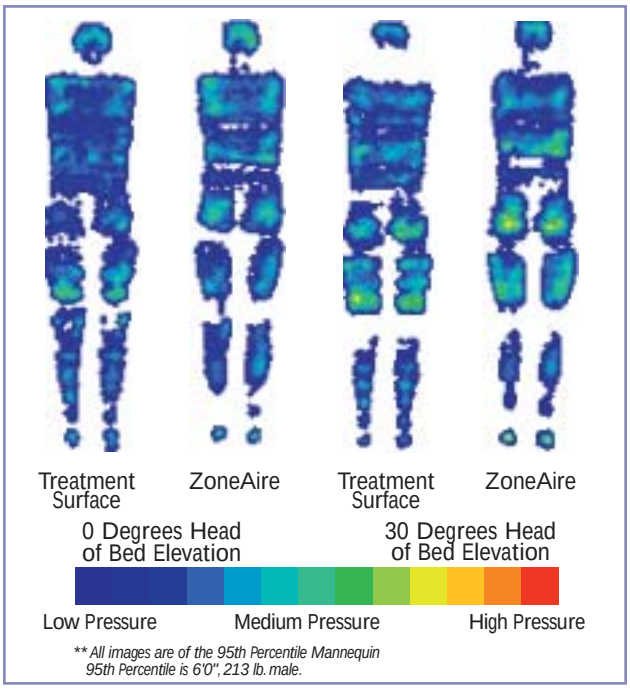
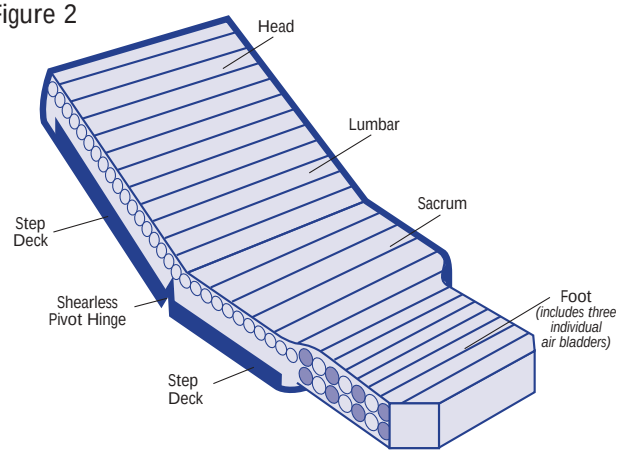


Figure 3 *Full-body interface pressure maps of the TotalCare System Treatment Surface and ZoneAire® Sleep Surface at 0 and 30 degrees head of bed elevations for a 6'0", 213 lb. male.*

Figure 2



Heel Suspension and Heel Pressure Relief

Interface pressure tests have shown that a heel relief function can dramatically reduce the interface pressure on the heels of the patient. Figure 4 shows the same subject as in Figure 3 on the TotalCare System Treatment Surface with and without using the heel suspension mode. Heel suspension reduces heel pressure and transfers it to the calf where it is better tolerated. This reduction in heel pressure directly affects the impact on the vascular flow through the heels of the patient. Figure 5 shows that the TotalCare System Treatment Surface, using the heel suspension mode, has much less effect on the blood flow, resulting in less pressure ulcer incidence[3].

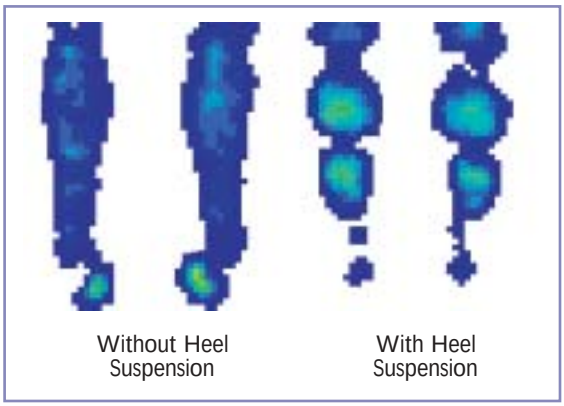
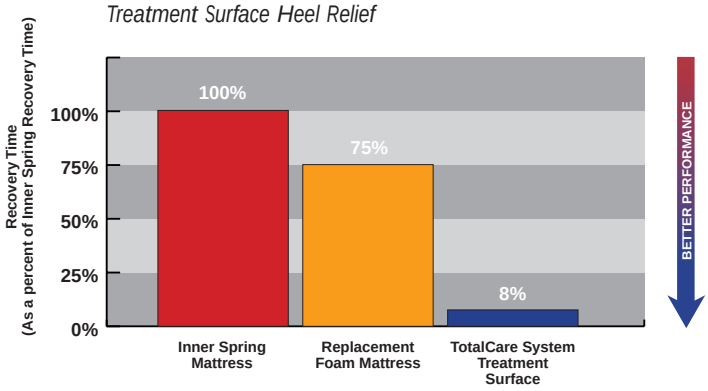


Figure 4 *Interface pressure maps of a 6'0", 213 lb. male with and without Heel Suspension.*

Figure 5

Heel Vascular Analysis: An Evaluation of TotalCare System Treatment Surface Heel Relief



FlexAfoot Retractable Foot

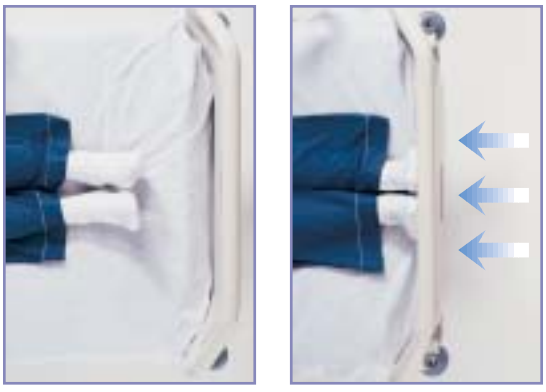


Figure 6 *The unique frame design provides the flexibility to adjust the length of the bed up to 12 inches.*

Both the Treatment and Short Stay Surfaces allow the use of the retractable foot. Shown in Figure 6, the retractable foot is a unique design that allows the caregiver to customize the overall length of the bed in both the bed and chair position. This capability reduces the need for additional foot support devices by supporting the patient's feet with the footboard. This also helps to minimize the migration of the patient towards the foot of the bed reducing the need of patient repositioning.