



DualFlex SYSTEM



PRESSURE MAPPING REPORT

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Understanding Pressure Ulcers

What is a Pressure Ulcer?

A pressure ulcer, also known as a bed sore or decubitus ulcer, is the progressive breakdown of the patient's skin and underlying tissue. Pressure ulcers most often occur on the parts of the body where the bone is closest to the skin such as the heels, ankles, hips, tailbone and elbows. Pressure ulcers develop quickly but can be prevented and most pressure ulcers will heal with treatment. (Mayo Clinic, 2018)

What Causes Pressure Ulcers?

Pressure ulcers can be caused by any of these conditions being present on the patient's skin: pressure, shear, friction, moisture and raised temperature. The most influential of these is pressure on the patient's skin.

The patient's weight causes pressure to be applied to their skin and tissue, compressing it between the support surface and their bone structure. When external pressures are higher than the capillary blood-flow pressure in the patient's tissue, the capillaries can become occluded; diminishing blood supply and causing tissue damage from lack of oxygen.

How can Pressure Ulcers be Prevented?

Pressure ulcers can be prevented by interface pressure distribution and regular repositioning of the patient. Interface pressure distributions that patients weight more evenly across their body and away from the critical areas where pressure ulcers can develop. Repositioning the patient regularly decreases the duration of pressure, reducing the occurrence of capillary occlusion.

Therapeutic Support Surfaces

Alternating Pressure Support Surfaces

Alternating Pressure Support Surfaces consist of a number of sealed air cells that alternatively inflate and deflate. The inflated cells provide adequate support to the patient whilst the deflated cells provide pressure relief, letting capillaries to recover their original size and shape to allow blood to flow normally.

Constant Low-Pressure Support Surfaces

Constant low-pressure support surfaces distribute the patient's weight more evenly and decreasing the resulting pressure on their body and thereby reducing the severity of capillary occlusion.

The DualFlex System

Introduction

The Carilex® DualFlex system offers wound care therapy designed specifically to take care of patient who are at risk of developing pressure ulcers, or already enduring distress and discomfort from pressure ulcers. DualFlex provides multiple mattress sizes to choose from, it is compatible with various body types and an array of environments. Details were considered thoroughly in the design of our mattresses ensuring the gentlest healing environment for sensitive skin. With teams of research and design experts working tirelessly throughout the years, DualFlex is a labour of love.

How the DualFlex System Benefits Patients

The DualFlex is a dynamic replacement mattress system, combining both high performance static foam, and active alternating air cell technology for exceptional patient comfort and healing.

Alternating therapy can be quickly and easily applied by connecting the ultra-quiet pump, whilst still providing a peaceful sleeping environment.

DualFlex Mattress

The DualFlex mattress is the high-performance foam layer features a zonal area design, including; GELTEX® inside technology, by channels for hose and cell connections to avoid pressure points on the surface to provide effective redistribution of pressure on the sacrum, head, shoulder blades and heel areas and supports Patients up to 250kgs.

DualFlex Power Unit

The DualFlex power unit has Intelligent Pressure Sensing (IPS) Technology that responds to patient movements on the mattress by automatically adjusting internal mattress pressure. This allows the DualFlex power unit to regulate the interface pressure between the patient and the mattress, continuously providing total envelopment.

Product Comparison: The DualFlex System vs. A Standard Foam Mattress

Dynamic Mode

Testing Procedure

The procedure used to test the system is as follows:

1. A pressure mapping test mat is connected to a computer and laid on top of a standard foam mattress
2. The patient lies on the standard foam mattress and data is sent from the test mat and recorded by the computer
3. The test mat is moved onto the mattress under test and the patient lies on the test mat again
4. The correct mode and weight settings for the test are selected on the power unit
5. Once the system is operating normally, data is sent from the test mat and recorded by the computer

Interpreting Test Data

Method

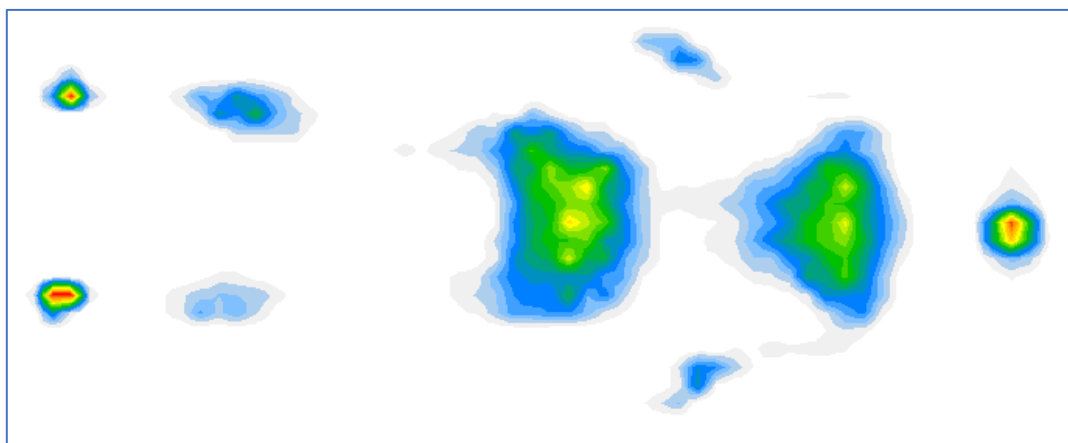
The test data is interpreted by finding the maximum interface pressure between the patient and foam mattress and the maximum interface pressure between the patient and the DualFlex mattress are compared by calculating the percentage improvement that the DualFlex mattress has over the foam mattress.

Calculating the Percentage Improvement

$$\text{Percentage Improvement} = 100 \times \left(1 - \frac{\text{Sample 2}}{\text{Sample 1}}\right)$$

*Test Results**Standard Foam Mattress vs. DualFlex Power Unit with DualFlex Mattress***Standard Foam Mattress**

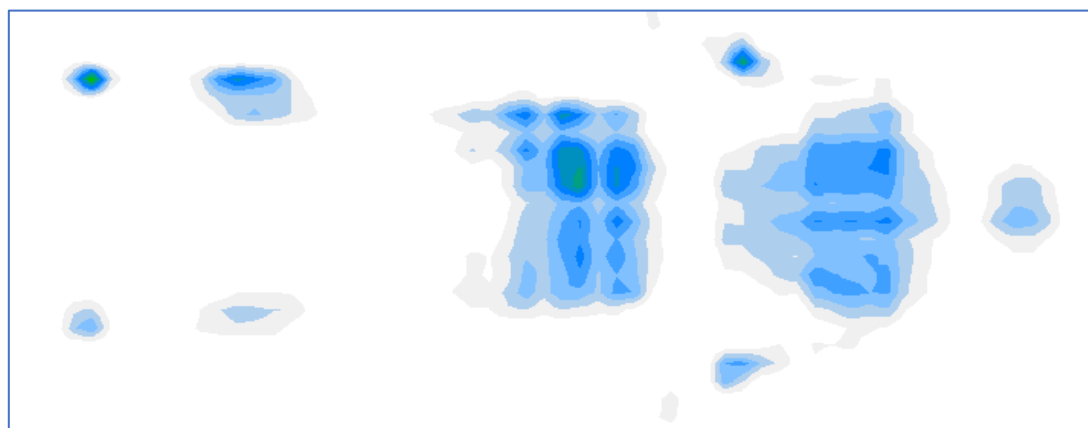
Patient height: 157cm Patient weight: 50kg



Measurement Area	Maximum Interface Pressure (mmHg)
Head	100
Left Shoulder	65
Right Shoulder	53
Left Buttock	71
Right Buttock	65

DualFlex Power Unit with DualFlex Mattress

Patient height: 157cm Patient weight: 50kg



Measurement Area	Average Interface Pressure (mmHg)	Maximum Interface Pressure (mmHg)	Improvement on Standard Foam Mattress
Head	16	19	81%
Left Shoulder	21	24	63.08%
Right Shoulder	17.5	27	49.57%
Left Buttock	20.5	27	61.97%
Right Buttock	24.5	35	46.15%

Conclusions

The interface pressure between the patient and the mattress has been shown to be improved when a DualFlex system is chosen as a replacement for a standard foam mattress. The effect will be that the system will aid the prevention and cure of decubitus pressure ulcers.

References

Mayo Clinic, 2018. *Mayo Clinic*. [Online]

Available at: <https://www.mayoclinic.org/diseases-conditions/bed-sores/symptoms-causes/syc-20355893>

[Accessed 28th March 2018].



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