

# Pressure Level Measuring Test Results for Opera<sup>®</sup> Eclipse



Comparison test between the Opera<sup>®</sup> Eclipse and  
an anonymised Hospital Foam Mattress

Data contains localised pressure data from 1024 sensors  
with Isobar display images

**Spera<sup>®</sup>**

# 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 Eclipse System

## Introduction

The Opera® Eclipse 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. Eclipse 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, Eclipse is a labour of love.

## How the Eclipse System Benefits Patients

The Opera® Eclipse provides interface pressure distribution via its two modes of use, constant and alternating. In constant mode the support surface is kept at a constant, uniform pressure. The support surface redistributes the pressure between the patient and the mattress more evenly than a standard foam mattress. In alternating mode, the two alternating cell sets are inflated and deflated cyclically.

## Eclipse Mattress

The Eclipse offers multiple types of mattress designed with extra attention to details, providing remarkable comfort. We gave extra considerations in eliminating sharp or protruding components from mattresses; ensuring that we deliver the most protective wound care prevention and therapy for the most sensitive skin. A integrated foam base to provide extra protection in the case of power outages and supports patients up to a weight of 150kg.

## Eclipse Power Unit

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

# Product Comparison: The Opera® Eclipse vs A Standard Foam Mattress

## Introduction

In this section of the report, the Opera® Eclipse system will be compared to a standard foam mattress.

## Constant 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 Eclipse mattress are compared by calculating the percentage improvement that the Eclipse mattress has over the foam mattress.

# Test Results

Regular® Hospital Foam Mattress	Left mmHg	Right mmHg	Color Chart Ref.
Head	100	100	A1
Shoulders	57	71	A1
Buttocks	100	100	A1

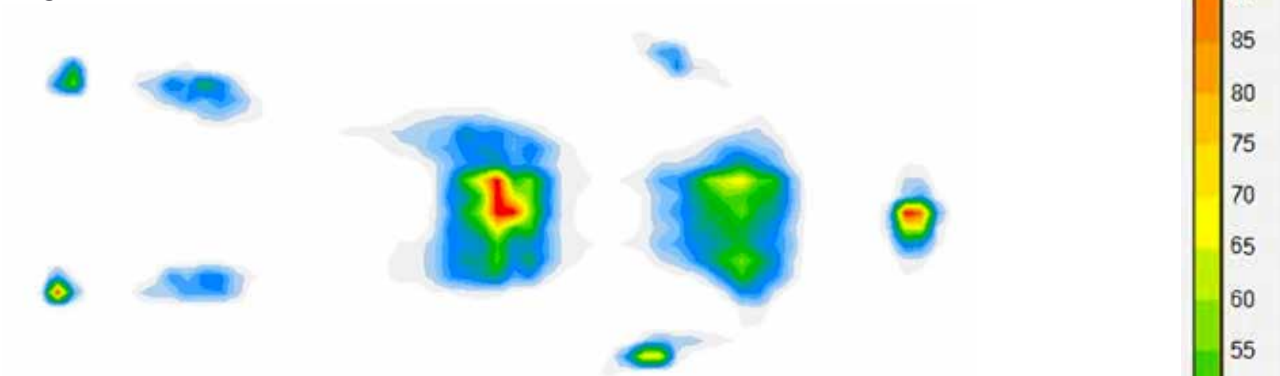
Opera® Eclipse Hybrid Mattress	Left mmHg	Right mmHg	Improvement on Standard Foam Mattress		Color Chart Ref.
			Left	Right	
Head	38	38	62%	62%	A2
Shoulders	33	30	42%	58%	A2
Buttocks	38	41	62%	59%	A2

Standard Foam Mattress:

Patient height: 157cm

Patient weight: 50kg

Diagram A1



Opera® Eclipse Mattress and Pump:

Patient height: 157cm

Patient weight: 50kg

Diagram A2



## Alternating 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 Eclipse mattress are compared by calculating the percentage improvement that the Eclipse mattress has over the foam mattress.

## Test Results

<b>Regular® Hospital Foam Mattress</b>	<b>Left mmHg</b>	<b>Right mmHg</b>	<b>Color Chart Ref.</b>
Head	100	100	A3
Shoulders	57	71	A3
Buttocks	100	100	A3

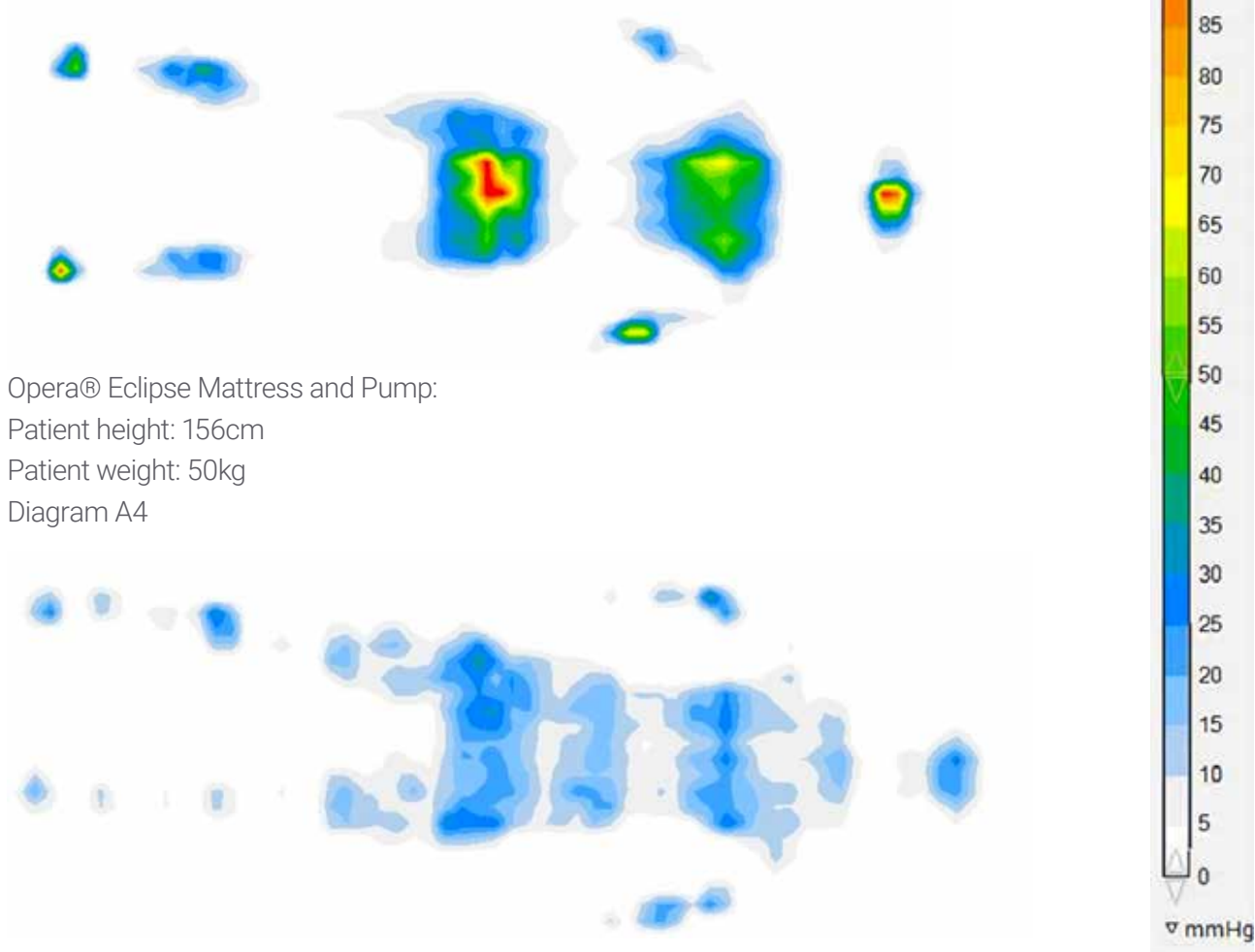
<b>Opera® Eclipse Hybrid Mattress</b>	<b>Left mmHg</b>	<b>Right mmHg</b>	<b>Improvement on Standard</b>		<b>Color Chart Ref.</b>
			<b>Foam Mattress</b>	<b>Color Chart Ref.</b>	
			<b>Left</b>	<b>Right</b>	
Head	28	28	72%	72%	A4
Shoulders	32	29	44%	59%	A4
Buttocks	33	36	67%	64%	A4

Standard Foam Mattress:

Patient height: 156cm

Patient weight: 50kg

Diagram A3

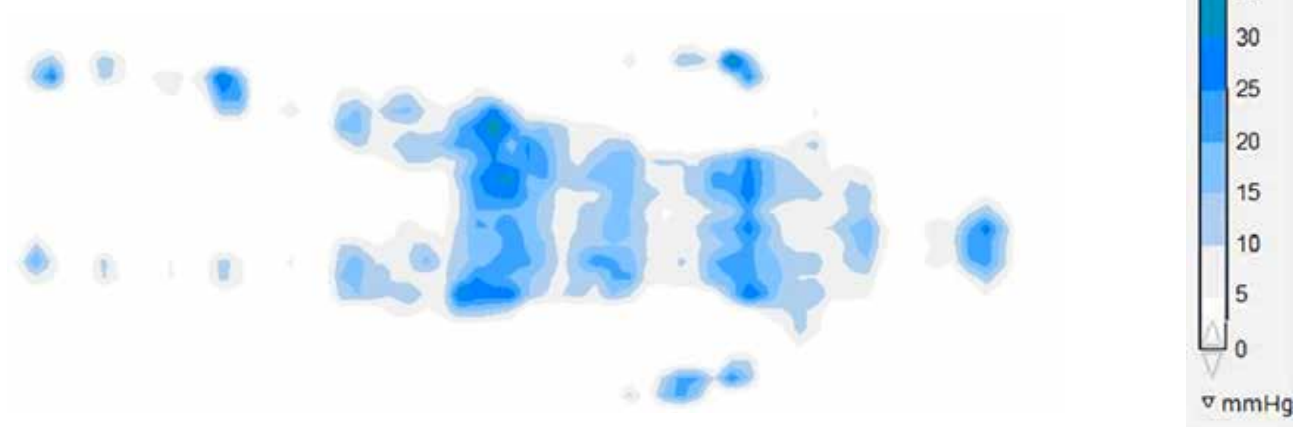


Opera® Eclipse Mattress and Pump:

Patient height: 156cm

Patient weight: 50kg

Diagram A4



## Conclusions

The interface pressure between the patient and the mattress has been shown to be improved when an Eclipse 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].



Azure House, Connaught Road, Kingswood, Hull, HU7 3AP  
Tel: 0333 122 9719 | Fax: 01482 440060 | [alpinehc.co.uk](http://alpinehc.co.uk) | [sales@alpinehc.co.uk](mailto:sales@alpinehc.co.uk)

Alpine HC Limited. Registered in England | Company Reg. 6318479 | VAT Reg. 828 5500 23 | ISO 9001:2008 Certified