

CARE SOLUTIONS

Dolphin Therapy

**Fluid Immersion
Simulation®**

How Dolphin Therapy Works

Dolphin Therapy is a reactive mattress system that creates a simulated fluid environment, enabling full immersion and envelopment of the patient. This significantly reduces pressure, shear and tissue deformation compared with conventional surfaces.

- Tissue symmetry is maintained
- Vascular occlusion is minimised, keeping blood flow close to normal
- Tissue ischaemia is prevented, even when a patient is nursed directly on the affected area
- Positive patient outcomes are consistently achieved

The Origins of Dolphin Therapy

The underlying technology traces back to research into protecting military dolphins during transport, after crushing-type internal injuries were linked to gravitational pressure and shear on their tissue. Engineers developed a system using Boyle's Law and Archimedes' Principle — combining pressure-wave algorithms to simulate a fluid within a closed air chamber, sufficient to maintain near-normal tissue perfusion. That approach was later adapted for major trauma care, and has since been developed for acute and community healthcare use.

The Pressure Redistribution Challenge

Conventional dynamic surfaces redistribute pressure either by alternating cell pressure or by spreading a patient's weight to create immersion. Both approaches run into the same conundrum: reducing surface contact pressure typically means increasing internal mattress pressure elsewhere — a trade-off Dolphin Therapy's fluid-simulation approach is designed to avoid.

One of the largest real-world evidence bases of any support surface.

7,000+

In Pursuit of an Ideal

No single support surface consistently outperforms all others in every circumstance. Air-fluidised beds (AFB) remain the benchmark for the most difficult wounds, with a 2001 Cochrane review finding good evidence that they can improve healing rates — but their weight and transport limitations restrict everyday use. Dolphin Therapy is designed to mimic the clinical benefits of air-fluidisation without those drawbacks.

Indications for Use

- Suitable for patients who would otherwise need air-fluidised therapy — ICU, burns & plastics, vascular surgery, trauma & orthopaedics
- Pressure-related tissue damage, including flap surgery for pressure ulcer repair
- Prevention of skin breakdown in vulnerable patients, including stabilised spinal cord injury
- Pain management, including end-of-life care
- Patients who are difficult to reposition, or non-concordant with repositioning

Clinical Evidence: Tissue Symmetry

CT imaging comparing a healthy individual on foam vs. Dolphin Therapy showed the gluteal fold compressed and distorted on foam, with distance from the ischial tuberosities to skin surface at just 75–78mm. On Dolphin Therapy, natural symmetry returned, with that distance restored to 99–109mm.

CT scans, St Joseph's Hospital, Tampa FL.

ICU

& critical care

Burns

& plastics

Vascular

surgery

Trauma

& orthopaedics

Evidence in High-Risk Care

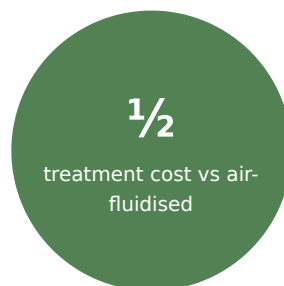
Spinal Cord Injury Outcomes

A 225-bed hospital with a 60-bed spinal cord injury service had been experiencing an 11% rate of hospital-acquired heel pressure ulcers despite using air-fluidised therapy. After introducing 44 Dolphin Therapy mattresses across its spinal injury units, that rate fell to 0% — alongside cost savings equating to roughly \$13,000 per bed.



Preventing Tissue Ischaemia Under Direct Pressure

A 2012 study comparing Dolphin Therapy with air-fluidised therapy for post-flap-surgery patients found incisional healing, successful flap closure and improved comfort, alongside zero occurrences of hospital-acquired pneumonia (previously a concern requiring recumbent positioning on AFB) — while treatment costs were halved.



Minimising Vascular Occlusion

A University of Southampton study measuring transcutaneous oxygen and carbon dioxide across supine, side-lying and high-sitting postures found 82% of patients showed a favourable physiological response on Dolphin Therapy.

Separately, a Division of Plastic Surgery study (UC San Diego / VA La Jolla) used Laser Doppler Flowmetry to compare tissue perfusion and vascular occlusion across surface types:

Tissue perfusion retained — foam	16%
Tissue perfusion retained — Dolphin Therapy	87%
Vascular occlusion — foam & gel surfaces	78-99%
Vascular occlusion — Dolphin Therapy	12%

Key Finding

Dolphin Therapy maintained near-normal blood flow even under direct compression at bony prominences — a statistically significant improvement over standard foam.

82%

favourable
physiological
response

Across supine, side-lying and high-sitting postures, most patients showed no clinically meaningful drop in transcutaneous oxygen — supporting Dolphin Therapy's use across a wide range of repositioning needs.

Positive Outcomes Across Sites

A multi-site case series reviewed 91 Dolphin Therapy patients across 12 hospitals, most with multiple complex comorbidities — including palliative and end-of-life care, renal disease, diabetes, spinal problems, amputation, and existing or multiple pressure ulcers. The top three clinical objectives were pressure ulcer management, pain management, and reduced repositioning frequency.

Cardiff & Vale Evaluation

In an 18-patient evaluation of high-risk, complex patients, most showed no skin deterioration; 50% of those with existing damage healed or improved, and all but three had their turning periods safely extended.

Intra-Operative Protection

A UC San Diego / University of Luebeck study used Laser Doppler Flowmetry to compare a standard operating trolley with Dolphin Therapy — mean perfusion reduction was 90.5% on the trolley versus just 22.3% on Dolphin Therapy.

TOP 3 CLINICAL OBJECTIVES

**Pressure ulcer
management**

Pain management

**Reduced
repositioning
frequency**

Reported Outcomes

- Wound healing and pressure ulcer prevention
- Improved comfort levels for patients
- Improved prevention, treatment and ease of repositioning versus previous surfaces
- Earlier patient discharge
- Ability to reposition directly onto existing wounds without compromising wound status
- Healing of moisture-associated skin damage
- Improved comfort and quality of life at end of life

96%

of 160-patient case series with pain reduction goals met

99%

comfort objectives achieved, same series

Arrange a Demonstration or Trial

If you'd like a demonstration of Dolphin Therapy, or have a specific patient in mind for a trial, get in touch with your BE / Essential HelpCare team.

essentialhelpcare.org | NZ: 0800 331 332 | AU: [insert local number]

Clinical support available across Australia and New Zealand.

Technical Specification

Adult therapy mattress	89cm (w) x 208cm (l) x 25cm (d)
Paediatric therapy mattress	71cm (w) x 128cm (l) x 10cm (d)
Wheelchair / seat cushion	43cm (w) x 43cm (l) x 10cm (d)
Max patient weight — adult mattress	248kg (39st)
Max patient weight — paediatric mattress	110kg (17st)
Max patient weight — wheelchair/seat cushion	113.6kg (18st)
Min patient weight — paediatric mattress	2.5-110kg (5½lbs-17st)

References

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ISO 9001:2008

ISO 14001

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Code**