A Clinical Evaluation for the Use of Dolphin Therapy in Paediatric Areas

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Improved Patient Outcomes

Introduction

Incidence of pressure ulcers in the paediatric population is estimated to be around 35%[1]. Although structurally components are similar to adult skin, developing skin is significantly thinner than that of adults. There is less cohesion between the epidermis and dermis, and fewer elastic fibres in the dermis, making the skin structurally more fragile; nerves are small, unmyelinated, and still in the process of organising, so the skin is less able to exhibit protective responses to environmental factors[2]. For these reasons, developing skin is more susceptible to environmental damage than adult skin[3].Many studies also agree that pressure ulcers in the paediatric population create potentially life-threatening complications and have a significant physical and psychological impact on both children and parents[4].

NICE guidance[5] for managing pressure ulcers in neonates, infants, children and young people therefore suggests that where pressure cannot be relieved by other means, a specialist surface "appropriate to the size and weight of the child or young person" should be used where it can be tolerated. The need for attention to the size and weight of the child is important as in many surfaces , the clinical efficacy is only tested for the adult population with a lower minimum weight limit set at 30kg, or they are designed to be zoned for adult morphology, making it inappropriate and often the therapy can be limited for this age group.

Within this paper, titled A Clinical Evaluation for the Use of Dolphin Therapy in Paediatric Areas (2021), the clinical evaluation outcome reports of 171 neonates, infants, children and young people nursed on Dolphin Therapy for the prevention and treatment of pressure ulcers will be discussed to assess the effectiveness of fluid immersion simulation technology for this group of patients.

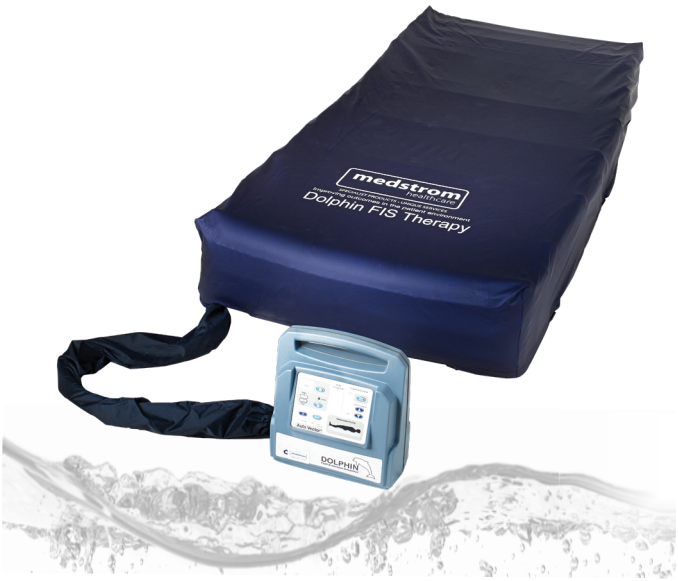
Dolphin Therapy

Dolphin Therapy is a reactive mattress system that creates a simulated fluid environment, enabling full immersion and envelopment, significantly reducing pressure, shear and tissue deformation.

Dolphin Therapy is being used across a number of specialist children's hospitals due to its no minimum weight limit and unique therapy that differs to a traditional dynamic air mattress. Due to the advancement of fluid immersion simulation, Dolphin Therapy also requires no zoning, meaning it is suitable for even the smallest of neonates.

In addition to skin integrity, Dolphin Therapy has been evidenced to:

- **Improve comfort**
- **Reduce pain**
- **Improve sleep**
- **Improve concordance**



Methodology

From 2018 to 2021, Medstrom's team of RGN Clinical Advisors have collected outcomes for paediatric patients nursed on Dolphin Therapy. This included **171 patients** aged between 4 months old to 16 years old across 15 hospital sites.

The majority of patients (**77%**) had their risk scores recorded as **high to very high risk**. Reasons for selecting Dolphin Therapy over a traditional dynamic mattress included:

- **Patients under the therapeutic weight for their previous surface**
- **Patient deteriorating on previous surface**
- **Clinical condition doesn't allow handling/repositioning**
- **Patients at end-of-life**

Most patients had multiple, often complex, co-morbidities including motor deficit, sensory deficit, carcinoma, multiple organ failure, malnutrition, vascular disease, neurological disorder, respiratory infection, meningitis and sepsis.

Outcome Results

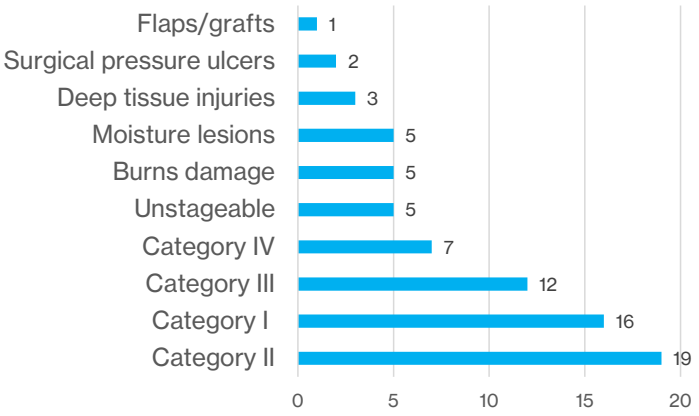
Prevention: 119 patients (71%) from the study had a clinical objective for prevention of skin damage. This subset of patients therefore did not have existing skin damage before being placed on Dolphin Therapy.

Two patients from this group developed new pressure ulcers, which included:

- 1 x Category IV pressure ulcer to the lower back *(notes state this was due to the patient being in surgery for over 10 hours).*
- 1 x Category I pressure ulcer to the sacrum *(notes state this was due to the patient sitting out in a chair on an inappropriate product).*

From the above, we can denote that Dolphin Therapy was therefore 98% effective at preventing skin damage.

Treatment: 52 patients (29%) had a clinical objective of treatment of skin damage. This subset of patients therefore had existing skin damage before being placed on Dolphin Therapy. The total amount of pressure ulcers nursed on Dolphin Therapy equalled 75, as often patients had multiple areas of skin damage. The skin damage included:



The final status after being nursed on Dolphin Therapy for the above areas of skin damage concluded:

- **10% healed**
- **44% improved**
- **42% remained static**
- **4% deteriorated**

Additional Outcomes

Due to the unique mechanisms of action on Dolphin Therapy, many patients have successful outcomes for comfort, pain management, sleep and concordance in comparison to traditional alternating systems that a lot of patients are unable to tolerate.

Comfort: 109 patients with completed outcomes had an original objective for improvement in comfort. **100% of patients had their objective fully or partially met.**

Pain Management: 76 patients with completed outcomes had an original objective for improvement in pain management. **100% of patients had their objective fully or partially met.**

Sleep: 64 patients with completed outcomes had an original objective for improvement in sleep. **100% of patients had their objective fully or partially met.**

Concordance: 38 patients with completed outcomes had an original objective for improvement in concordance. **95% of patients had their objective fully or partially met.**

Conclusion

The use of Dolphin Therapy for neonates, infants, children and young adults has proven successful, with 98% effectiveness in the prevention of pressure ulcers and 96% effectiveness in the treatment of pressure ulcers. For the majority of pressure ulcers (54%), the treatment outcome showed the pressure ulcer healed or improved, and a further 42% remained static, which is significant considering the complex patient co-morbidities seen within this group of patients.

Additionally, the use of Dolphin Therapy has proven successful for additional outcomes such as comfort, pain management, sleep and concordance; all of which will contribute to improved quality of life and overall patient experience.

For more information on Dolphin Therapy, including clinical evidence, clinician testimonials that testify its effectiveness in comparison to traditional dynamics, visit: **www.medstrom.com/dolphin-therapy** or call **0845 371 1717** where an RGN Clinical Advisor will be able to assist you.

Note: *Dolphin Therapy is a rental only product due to its speciality and can be rented on a patient-specific basis, outside of existing mattress contracts.*

References

1. **Pediatric pressure ulcer prevalence: a multicenter, cross-sectional, point prevalence study in Switzerland**, Ostomy Wound Manage. 2012 Aug;58(8):6. Schols, Joseph G A [corrected to Schols, Jos M G A].

2. **Skin care for the newborn.** Sarkar et al (2010). Inidan Paediatrics, VOLUME 47 JULY 17, 2010.

3. **Best Practice Statement: Principles of wound management in paediatric patients** . Rogers, A,. et al,. 2014. . Wounds UK. November 2014. Pgs. 1-14

4. **What do we know about paediatric pressure ulcer risk assessment?** Denis Anthony (2017). Wounds UK Vol 13 | No 1 | 2017

5. **https://pathways.nice.org.uk/pathways/pressure-ulcers/managing-pressure-ulcers-in-neonates-infants-children-and-young-people#content=view-node%3Anodes-pressure-redistribution**

Scan for a testimonial video from a Children's Hospital who have utilised Dolphin Therapy for 10 years.

Dolphin Therapy fluid immersion simulation is uniquely available in different sizes, either for a hospital bed or cot.

Call: 0845 371 1717 or email: info@medstrom.co.uk for more information.