



How Clinical Seating can assist with Early Mobilisation and Rehabilitation

Presented by

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Occupational Therapist &
Clinical Director at Seating Matters

MARTINA TIERNEY

- 30 Years' experience working as an Occupational Therapist.
- Worked in settings including acute, mental health, rehab, care facilities and in the community care.
- Designed the chairs after finding that existing chairs did not meet the needs of my patients'.
- Author of 'The Clinician's Seating Handbook'.
- Continually educating other clinicians' of the importance of specialised seating.

WHAT I'LL COVER

- **What is Good Sitting and why is it Important?**
- **Critical Illness, ICU Acquired Weakness and Benefits of Early Mobilisation**
- **Clinical Guidelines & Expert Recommendations**
- **The Role of Sitting in Recovery From Critical illness**
- **Sydney GoFlat™ - Overview, Patient Case Studies, HCP Feedback**
- **Summary 'How Clinical Seating can Assist With Early Mobilisation & Rehabilitation'**
- **Next Steps**

WHAT IS 'GOOD' SITTING? WHY IS IT IMPORTANT?

- **By approximately ten months of age, a typically developing infant demonstrates good sitting posture.**
- **The infant sits with pelvis and spine in a straight line. The head is balanced securely over the body and both hands are free to interact with the environment.**
- **This is an efficient posture, i.e. it requires the least amount of exertion to maintain.**





WHAT HAPPENS TO OUR BODY WHEN WE LOSE POSTURAL CONTROL?

FORCES AT WORK ON THE BODY

Tension.

Compression.

Shear.

Friction.

Bending.

Torsion.



STABILITY REDUCES THE EFFECT OF FORCES ON THE BODY

STABILITY

- **The lower the centre of gravity the more stable the person is.**
- **The wider the base of support the more stable a person is.**

GOALS OF SEATING

THREE AREAS:

- **Functional/Activity related e.g. feeding, drinking, reading.**
- **Physiological function e.g. swallowing, respiration, digestion, elimination.**
- **Psychological function e.g. effective communication, socialising, self image.**

CRITICAL ILLNESS IS ANY LIFE-THREATENING CONDITION WHICH REQUIRES VITAL ORGAN SUPPORT¹



Source:

- 1) Nates et al., 2016 ICU Admission, Discharge, and Triage Guidelines: A Framework to Enhance Clinical Operations, Development of Institutional Policies, and Further Research <https://pubmed.ncbi.nlm.nih.gov/27428118/>
<https://www.sciencedirect.com/topics/nursing-and-health-professions/critical-illness>
- 2) Adhikari NK, Fowler RA, Bhagwanjee S, Rubinfeld GD. Critical care and the global burden of critical illness in adults. *Lancet*. 2010;376(9749):1339–1346. doi: 10.1016/S0140-6736(10)60446-1 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7136988/>
- 3) Schell CO, Gerdin Wärnberg M, Hvarfner A, Höög A, Baker U, Castegren M, Baker T. The global need for essential emergency and critical care. *Crit Care*. 2018 Oct 29;22(1):284. doi: 10.1186/s13054-018-2219-2. PMID: 30373648; PMCID: PMC6206626.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6206626/>

ICU ACQUIRED WEAKNESS IS COMMON AMONG ICU SURVIVORS

- Reductions in Muscle Mass, 20-40% in 1 week.
- Reductions in Bone Mineral Density
- Impairment in other Body Systems, in the first week.
- Clinical Research has reported functional deficits of ICUAW⁴

Source:

4) Herridge MS, Tansey CM, Matté A, Tomlinson G, Diaz-Granados N, Cooper A, Guest CB, Mazer CD, Mehta S, Stewart TE, Kudlow P, Cook D, Slutsky AS, Cheung AM; Canadian Critical Care Trials Group. Functional disability 5 years after acute respiratory distress syndrome. N Engl J Med. 2011 Apr 7;364(14):1293-304. doi: 10.1056/NEJMoa1011802. PMID: 21470008. <https://pubmed.ncbi.nlm.nih.gov/21470008/>

ICU ACQUIRED WEAKNESS IS COMMON AMONG ICU SURVIVORS

5

YEARS POST DISCHARGE

Source:

4) Herridge MS, Tansey CM, Matté A, Tomlinson G, Diaz-Granados N, Cooper A, Guest CB, Mazer CD, Mehta S, Stewart TE, Kudlow P, Cook D, Slutsky AS, Cheung AM; Canadian Critical Care Trials Group. Functional disability 5 years after acute respiratory distress syndrome. *N Engl J Med*. 2011 Apr 7;364(14):1293-304. doi: 10.1056/NEJMoa1011802. PMID: 21470008. <https://pubmed.ncbi.nlm.nih.gov/21470008/>

EARLY MOBILISATION IMPROVES PATIENT OUTCOMES

The effect of systematic early mobilisation in mechanically ventilated adult ICU patients has shown benefits vs. late mobilisation:

- Muscle strength and physical function⁵

Early mobilisation has also shown trends towards improved patient outcomes in terms of:

- Duration of Mechanical Ventilation
- ICU length of stay
- Hospital length of stay.⁶

Source:

5) Menges, D et al. 2021. Critical Care. Systematic early versus late mobilization or standard early mobilization in mechanically ventilated adult ICU patients: systematic review and meta-analysis. (2021) 25:16. <https://doi.org/10.1186/s13054-020-03446-9>

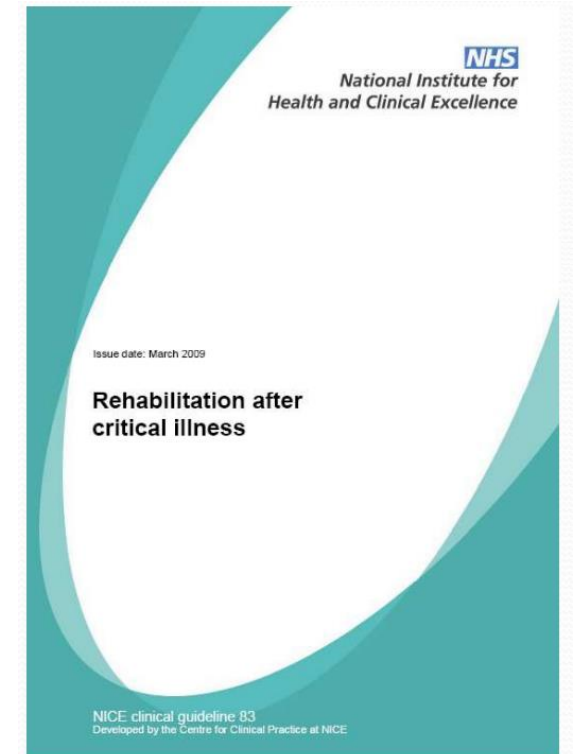
6) Monsees, J et al. 2022. A systematic review of the effect of early mobilization on length of stay for adults in the intensive care unit. Nursing and Critical Care. <https://onlinelibrary.wiley.com/doi/full/10.1111/nicc.12785>

CLINICAL GUIDELINES & EXPERT RECOMMENDATIONS

NICE GUIDELINES RECOMMEND TO START REHABILITATION AS EARLY AS POSSIBLE

Rehabilitation after critical illness in adults (CG83)

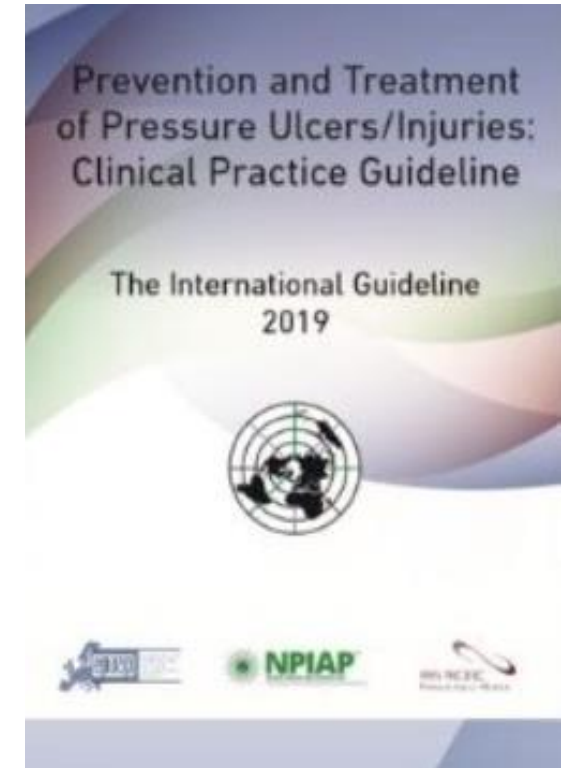
For patients at risk, (of developing physical and non-physical morbidity) start rehabilitation as early as clinically possible, based on the comprehensive clinical assessment and the rehabilitation goals.



PRESSURE ULCERS / INJURIES GUIDELINES ALSO RECOMMEND EARLY MOBILISATION

Consider individuals with limited mobility, limited activity and a high potential for friction and shear to be at risk of pressure injuries.

Implement an early mobilisation program that increases activity and mobility as rapidly as tolerated.



EXPERT CONSENSUS AND RECOMMENDATIONS ON SAFETY CRITERIA ARE AVAILABLE

Hodgson et al - 2014⁷

- Active mobilization of mechanically ventilated critically ill adults.
- These have the potential to guide ICU rehabilitation whilst minimizing the risk of adverse events.

OBTAINING THE NECESSARY EQUIPMENT FOR EARLY MOBILISATION AND REHABILITATION IS RECOMMENDED

Hodgson et al – 2021⁷

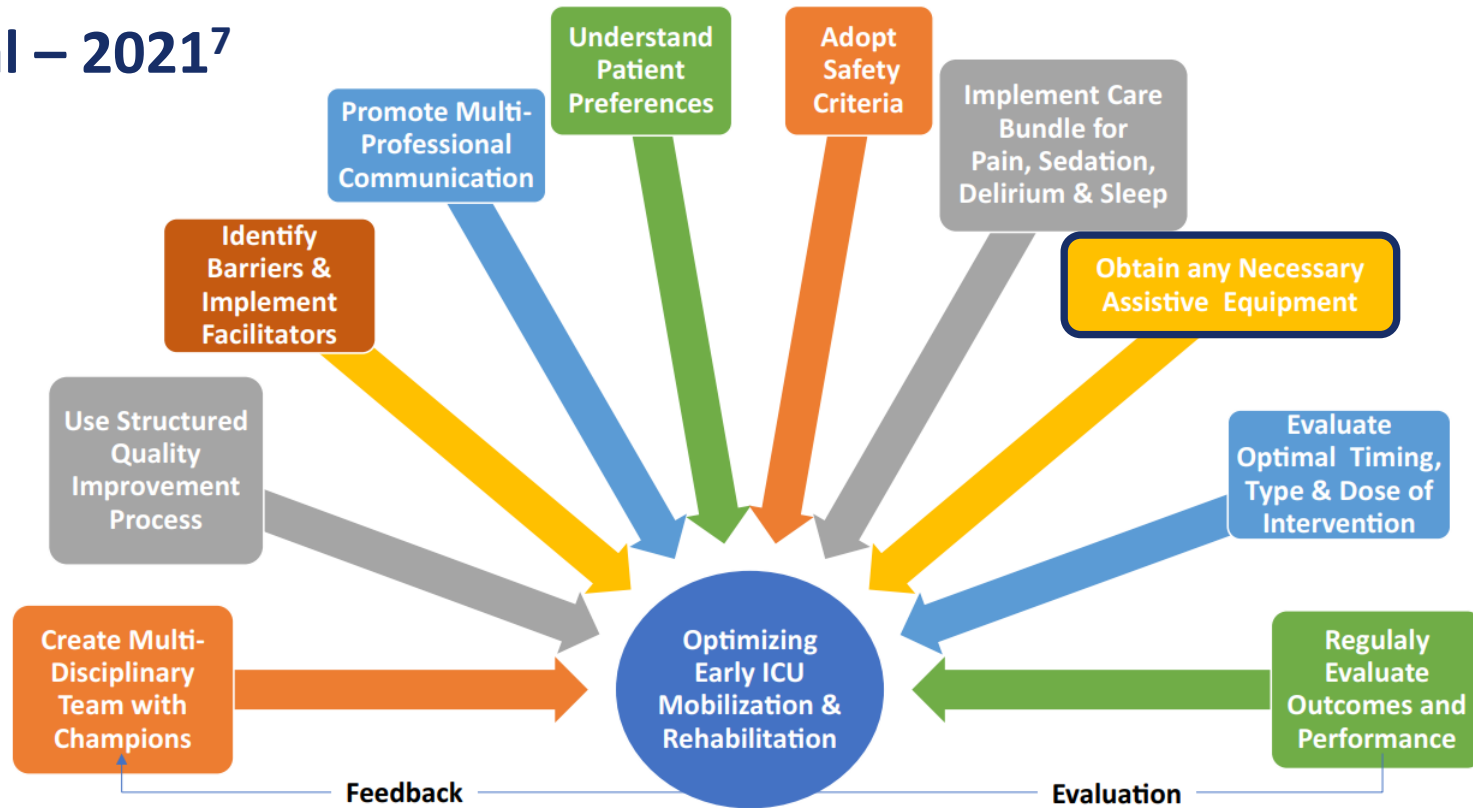


Fig. 1 Ten strategies to optimize early mobilization and rehabilitation in ICU

THE ROLE OF SEATING IN RECOVERY FROM CRITICAL ILLNESS

SITTING IN BED AND IN CHAIRS IS AMONGST THE FIRST STEPS TO RECOVERY FROM CRITICAL ILLNESS

ICU Mobility Scale

	Classification	Definition
0	Nothing (lying in bed)	Passively rolled or passively exercised by staff, but not actively moving.
1	Sitting in bed, exercises in bed	Any activity in bed, including rolling, bridging, active exercises, cycle ergometry and active assisted exercises; not moving out of bed or over the edge of the bed.
2	Passively moved to chair (no standing)	Hoist, passive lift or slide transfer to the chair, with no standing or sitting on the edge of the bed.
3	Sitting over edge of bed	May be assisted by staff, but involves actively sitting over the side of the bed with some trunk control
4	Standing	Weight bearing through the feet in the standing position, with or without assistance. This may include use of a standing lifter device or tilt table.
5	Transferring bed to chair	Able to step or shuffle through standing to the chair. This involves actively transferring weight from one leg to another to move to the chair. If the patient has been stood with the assistance of a medical device, they must step to the chair (not included if the patient is wheeled in a standing lifter device).

ICU Mobility Scale

	Classification	Definition
6	Marching on spot (at bedside)	Able to walk on the spot by lifting alternate feet (must be able to step at least 4 times, twice on each foot), with or without assistance.
7	Walking with assistance of 2 or more people	Walking away from the bed/chair by at least 5 metres (5 yards) assisted by 2 or more people.
8	Walking with assistance of 1 person	Walking away from the bed/chair by at least 5 metres (5 yards) assisted by 1 person.
9	Walking independently with a gait aid	Walking away from the bed/chair by at least 5 metres (5 yards) with a gait aid, but no assistance from another person. In a wheelchair bound person, this activity level includes wheeling the chair independently 5 metres (5 yards) away from the bed/chair.
10	Walking independently without a gait aid	Walking away from the bed/chair by at least 5 metres (5 yards) without a gait aid or assistance from another person.



EFFECTIVE SEATING HAS MULTIPLE GOALS

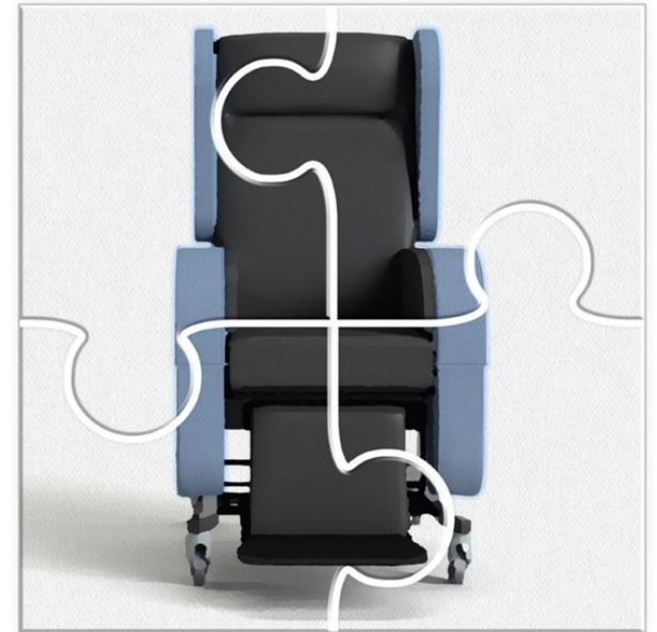
- Functional/Activity related e.g. feeding, drinking, reading.
- Physiological function e.g. swallowing, respiration, digestion, elimination.
- Psychological function e.g. effective communication, socialising, self image.

EFFECTIVE SEATING ASSISTS PATIENT RECOVERY:

- Enabling early mobilisation
- Supporting the user's body
- Enabling function
- Managing skin and pressure needs
- Providing comfort
- Ensuring safety

EFFECTIVE SEATING MEETS FOUR KEY PRINCIPLES

- Loading the body
- Providing Postural Support
- Allowing effective repositioning
- Using an effective cushion



PRINCIPLE NO.1

LOAD THE BODY



1. LOAD THE BODY

Maximise the body's contact with the seating surface.

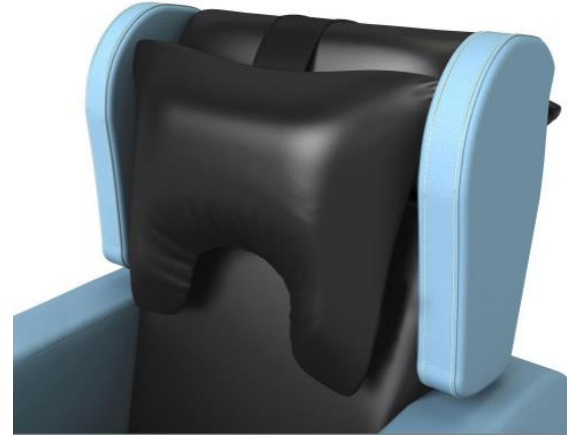
Tip: Remember to ask yourself 'where else can I load the body?'

PRINCIPLE NO.2

PROVIDE POSTURAL SUPPORT



2. PROVIDE POSTURAL SUPPORT



PRINCIPLE NO.3

**ALLOW EFFECTIVE
REPOSITIONING**



3. ALLOW EFFECTIVE REPOSITIONING



PRINCIPLE NO.4

USE APPROPRIATE
SURFACE/CUSHION



4. USE AN APPROPRIATE SURFACE

IMMERSION; Cushion needs to be deep enough to allow immersion (Sprigle 2000).⁹

ENVELOPMENT; The ability of the support surface to conform/mould around the body irregularities. Poor envelopment leads to high interface pressure.



THESE PRINCIPLES HAVE BEEN
CONSIDERED IN THE
SYDNEY GOFLAT

Sydney GoFlat

The Sydney GoFlat™ seat has been designed to enable safe and efficient transfer of critical care patients from lying in bed to a fully seated, clinically optimised position offering care professionals new options in early patient mobilisation.



INCLUDES MULTIPLE FEATURES TO BENEFIT ICU PATIENTS

- Lay flat Compatibility
- Pressure Management
- Tilt in Space
- Height Adjustment
- Footplate Height Adjustment & Stowaway
- Height Adjustable Arm Rest
- Fall Away/Removable Arm Rest
- Ergonomic Push Handle
- O2 Tank / IV Pole / Catheter Bag Compatibility



PATIENT CASE STUDIES & HCP FEEDBACK

ENABLED THE MOBILISATION OF A NEURO TRAUMA PATIENT

- Patient was unable to mobilise and had been in bed for 3 months, had very fragile skin and was Bariatric.
- Patient had difficulty with transfers between bed and chair due to severe deconditioning.
- *“Whilst we could hoist the patient between the bed and chair, removal of the sling would be very difficult largely due to her size and it would not be appropriate to leave the sling underneath to maintain skin integrity.”*
- Patient was transferred via Pat Slide and able to sit out daily for up to 3 hours.

OT – Australia

IMPROVED QUALITY OF LIFE FOR A PALLIATIVE PATIENT

- Patient had a Spinal Cord Injury, Progressive Disease, Unsuitable for Hoisting.
- Lateral Transfer to Sydney GoFlat Chair.
- Gave Patient control of positioning.
- Allowed access to Hospital Garden.

Matilda, OT, Sydney – Australia

ENABLED SITTING FOR A SEVERE BURNS UNIT PATIENT

- Patient suffered burns to 80% body, multiple skin grafts and infections and in severe pain, lifter and hoist not an option.
- Using the Hovermatt, patient was able to transfer to the Sydney and used the chair daily for almost 2 weeks.



OT – Australia

ENABLED SITTING FOR AN ICU PATIENT WITH A TRACHEOSTOMY

- Patient was transferred from the bed to the chair using a Ceiling Hoist.
- Patient and was able to sit up and was able to be moved outside to aid recovery.
- First time in 80 days
- Patient commented that the Sydney GoFlat “was comfortable” and that it “was lovely”.

Susie, OT, Gateshead – UK



ENABLED INCREASED FUNCTION OF A CRITICAL RTC SURVIVOR

- Patient able to engage with friends and family, spend time outside, to sit in more upright position to eat a meal.
- Patient had control of remote and reported that it gave meaning and purpose to her day.
- Patient progressed to sitting in a standard chair.
- Patient described the Chair as “Life Changing” and the “Highlight of year so far”

Matilda, OT, Sydney – Australia

THE PATIENT EXPERIENCE IS POSITIVE

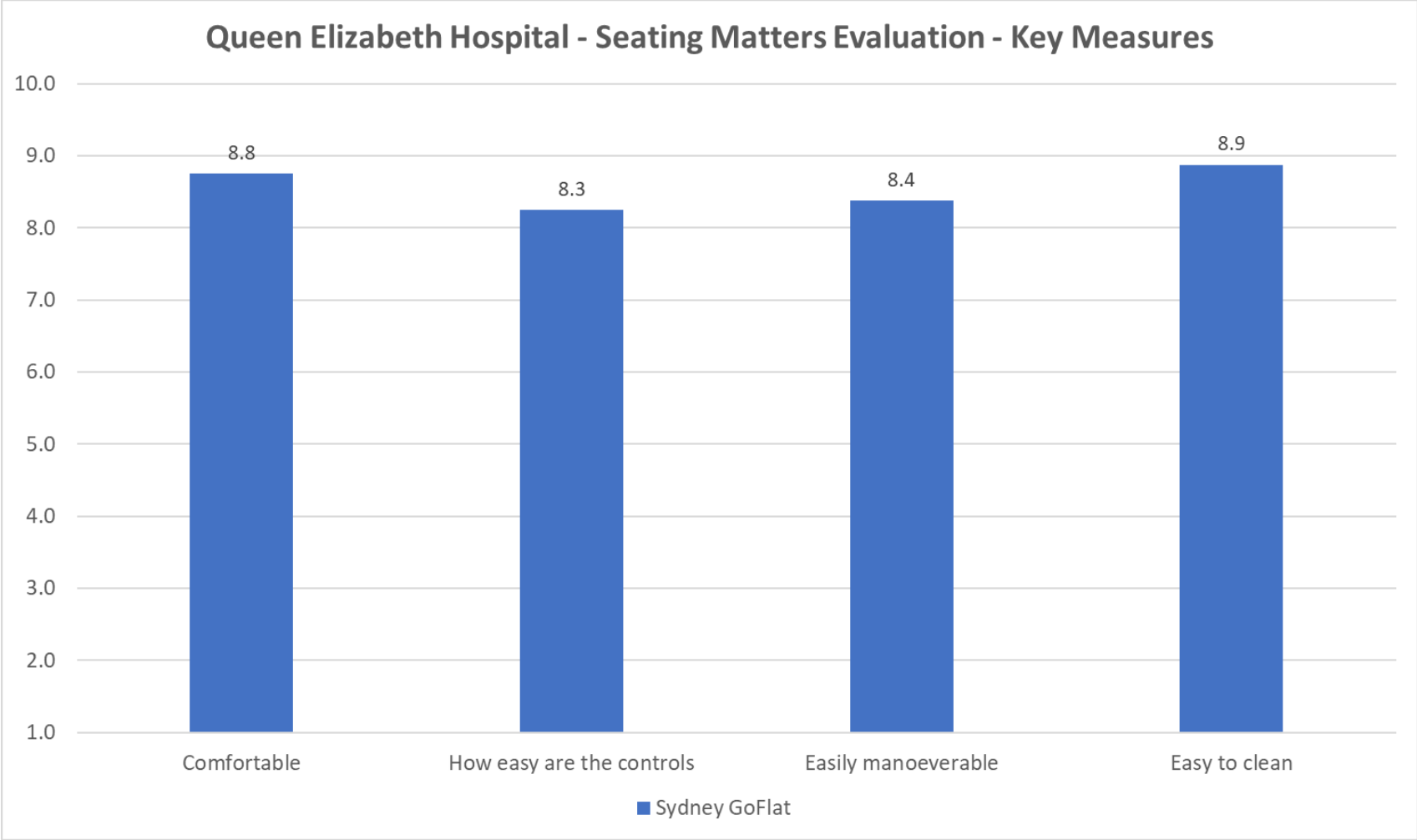
- Patients have commented on being comfortable in the Chair, and being out of bed.
- Patients enjoy being able to use remote control to reposition.
- Functional benefits: eating and drinking in the chair.
- Psychological benefits: communicating, socialising with friend / family, moved outside.

THE HOSPITAL STAFF EXPERIENCE IS ALSO POSITIVE

- Patients appear very comfortable and benefit from Tilt in Space.
- Enabling early mobilisation of a broad range of ICU patients, including myopathic, de-conditioned patients
- More efficient / less staff required for Lateral transfers vs. Hoisting.
- Lateral transfer is an option for certain Patients who cannot be Hoisted.
- Drop down arms assist with Hoisting as well as Lateral transfers.

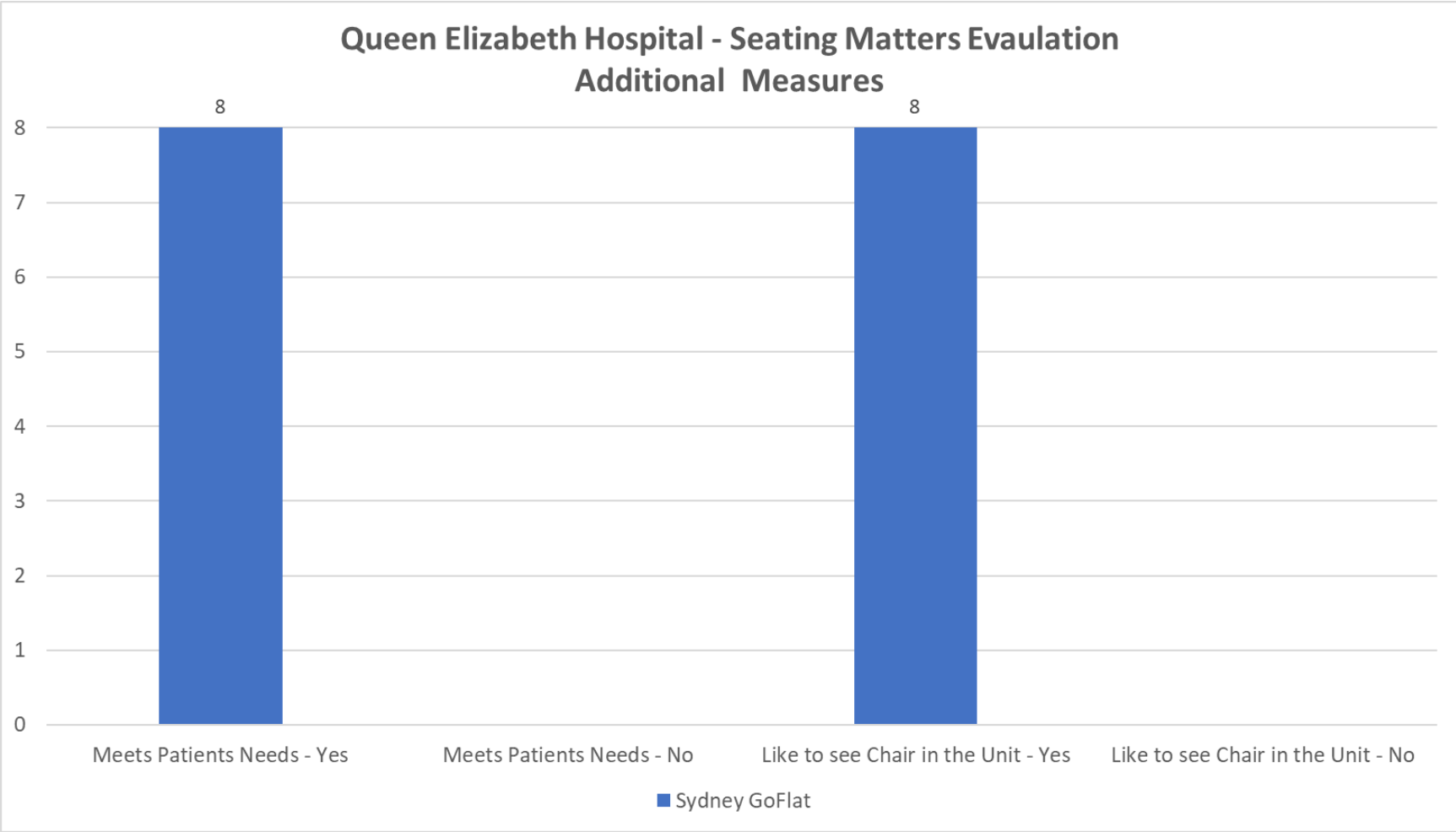
PRODUCT TRIAL
QUEEN ELIZABETH HOSPITAL

QUEEN ELIZABETH HOSPITAL TRIAL SCORED >8/10 ACROSS KEY MEASURES



Source:

ALL HCPS THOUGHT IT MET THE NEEDS OF CRITICAL CARE PATIENTS AND WOULD LIKE THE CHAIR IN THE UNIT



Source:

'HOW CLINICAL SEATING CAN ASSIST WITH EARLY MOBILISATION & REHABILITATION'

CLINICAL SEATING CAN ASSIST IN EARLY MOBILISATION & REHABILITATION

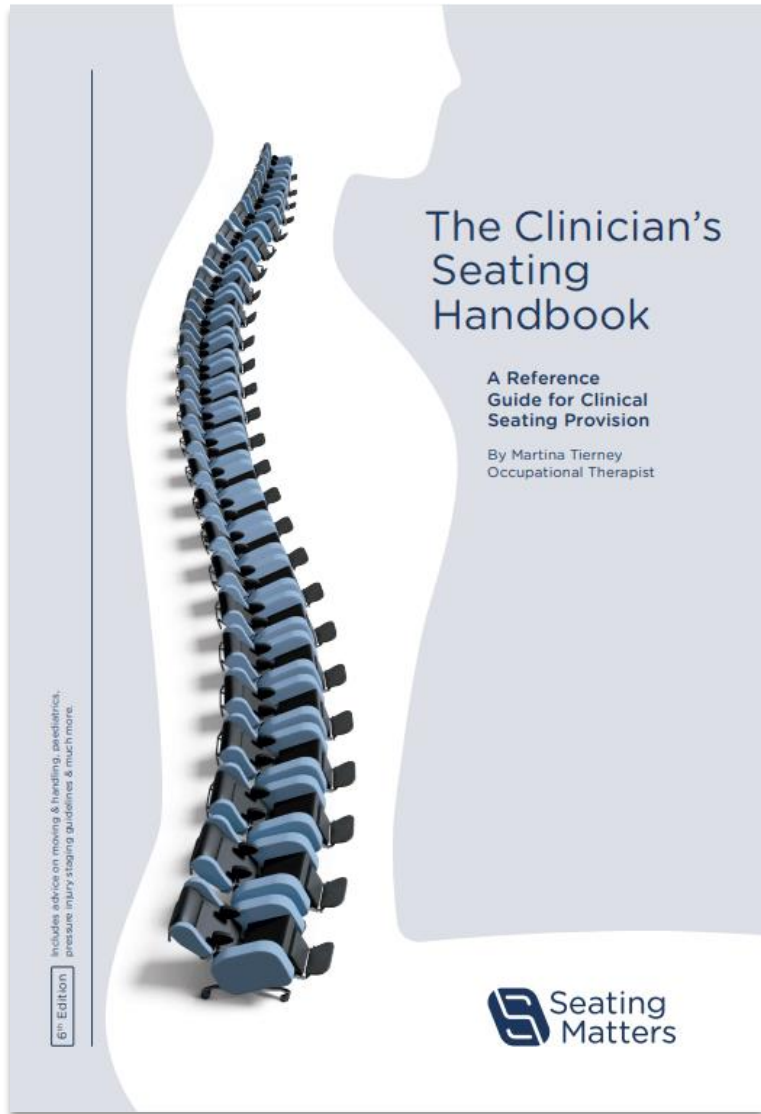
- Critical illness is estimated to result in several million deaths each year.
- ICU-Acquired Weakness is common among ICU survivors.
- Early mobilisation has shown benefits in Muscle strength and Physical function and trends towards improving Patient outcomes.
- Sitting in bed and in chairs is the first step to recovery from critical illness.
- Having the necessary assistive equipment is a best practice strategy to optimize early mobilisation and rehabilitation.

THE SYDNEY GOFLAT CAN ASSIST IN EARLY MOBILISATION & REHABILITATION

- **The Sydney GoFlat™ is a new option in early mobilisation and safe patient handling.**
- **Patient Experience - Comfort, Getting Patient Out of Bed, Self Reposition, Enabling Function, Enabling to be Outside.**
- **Staff Experience – Comfort, Enabling Early Mobilisation, Safe Patient Transfers, Easy of use, Manoeuvre, Clean.**

NEXT STEPS...

- The Sydney GoFlat™ has been trialled in multiple Hospitals globally, with normal use and further trials underway.
- A Clinical Study at Westmead Hospital, Sydney, Australia is being planned amongst ventilator-dependant patients.
- Feedback from trials and normal use is being input to continued Product Development, and additional accessories are in development.



THE CLINICIAN'S SEATING HANDBOOK

A reference guide for clinical seating provision

Martina Tierney

Occupational Therapist

THANK YOU

JUST ASK THE PATIENT

**WE WOULD APPRECIATE YOUR INPUTS TO HELP DEVELOP
OUR CLINICAL SEATING FOR THE CRITICAL CARE PATIENT....**

References

1. Nates et al., 2016 ICU Admission, Discharge, and Triage Guidelines: A Framework to Enhance Clinical Operations, Development of Institutional Policies, and Further Research <https://www.sciencedirect.com/topics/nursing-and-health-professions/critical-illness> <https://pubmed.ncbi.nlm.nih.gov/27428118/>
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3. Schell CO, Gerdin Wärnberg M, Hvarfner A, Höög A, Baker U, Castegren M, Baker T. The global need for essential emergency and critical care. *Crit Care*. 2018 Oct 29;22(1):284. doi: 10.1186/s13054-018-2219-2. PMID: 30373648; PMCID: PMC6206626.
4. Herridge MS, Tansey CM, Matté A, Tomlinson G, Diaz-Granados N, Cooper A, Guest CB, Mazer CD, Mehta S, Stewart TE, Kudlow P, Cook D, Slutsky AS, Cheung AM; Canadian Critical Care Trials Group. Functional disability 5 years after acute respiratory distress syndrome. *N Engl J Med*. 2011 Apr 7;364(14):1293-304. doi: 10.1056/NEJMoa1011802. PMID: 21470008
5. Menges, D et al. 2021. *Critical Care*. Systematic early versus late mobilization or standard early mobilization in mechanically ventilated adult ICU patients: systematic review and meta-analysis. (2021) 25:16
6. Monsees, J et al. 2022. A systematic review of the effect of early mobilization on length of stay for adults in the intensive care unit. *Nursing and Critical Care*
7. Hodgson et al. *Critical Care* (2014) 18:658 DOI 10.1186/s13054-014-0658-y
8. Hodgson et al. 2021. *Critical Care*. Ten strategies to optimize early mobilization and rehabilitation in intensive care. *Crit Care* (2021) 25:324
9. Sprigle, S. (2000) Effects of Forces and the Selection of Support Surfaces. *Topics in Geriatric Rehabilitation*, 16(2), 47-62.

Disclaimer

Disclaimer: Always review and follow your hospital policy regarding Patient Transfers.

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