

# Comparison of active and reactive mattresses in domiciliary-based pressure injury healing: A randomised feasibility study

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## Background

Pressure mattress prescription is a proven modality for the treatment of pressure injuries (1). Reactive surfaces provide pressure care through immersion and envelopment, increasing the surface area in contact with the support surface and thus decreasing localised interface pressure (1, 2). Active surfaces use temporary offloading to promote reactive hyperaemia, increasing the blood flow to the area and periodically decreasing pressure at the skin interface (1, 3). Hybrid surfaces use a combination of these principles, either in sequence or concurrently (4, 5). Existing research comparing the effectiveness of mattresses in limited, with no research conducted in a community setting (4).

## Research Question

This study had two objectives:

- To conduct a feasibility study investigating the comparative effectiveness of the two main types of pressure mattresses with regards to healing pressure injuries.
- To provide insights into the user acceptability of the two main types of pressure mattresses.

## Method

A feasibility study was conducted in a domiciliary setting in Canberra. Patients 65+ years with an existing Stage 2 pressure injury who slept in a bed were eligible.

- Participants were randomised to either the active or the reactive mattress group.
- Participants received standard wound care by community nurses, including Waterlow Risk Assessment (6); pressure injury prevention education; and provided with a cushion for use when not in bed.
- Photographs were used for blind assessment of wound healing using the Revised Wound Assessment Scale (RevPWAT) (7).
- Secondary information was gathered through survey regarding user acceptability of the mattresses and habitual changes regarding pressure injury prevention strategies (8).



Medacure, 2020

## Results

- Four patients completed the study, with two each allocated to each mattress group (see table). Results were inconclusive with regards to comparative effectiveness and user acceptability.
- Survey results indicated a low awareness of prevention strategies at baseline with an increase in the frequency of pressure injury prevention strategies following the education on prevention techniques.

Participant	Age (yrs)	Gender	Pressure Injury	Waterlow			Mattress Group	Wound Healing	Time spent on mattress	Subjective	
				Total	Mobility	Nutrition					Body
1	83	Male	sacrum	19	3	2	3	Active	No change	1 night	(-) Requested removal of mattress after one night for comfort reasons.
2	85	Male	IT	10	2	0	0	Active	Data unavailable due to no baseline photograph	23 nights	(+) More comfortable than usual mattress (-) Harder to reposition and transfer with some bottoming-out
3	80	Female	Coccyx	21	2	3	3	Reactive	29 days to complete healing	29 nights	(+) Improved sleeping positions, comfort and pain levels (+) Easier to reposition and transfer (-) Difficulty securing overlay to the bed
4	75	Female	IT	21	5	0	0	Reactive	No change (PI related to commode seat)	25 nights	(-) Found mattress cold and so placed a sheepskin on top (-) Much harder to reposition and transfer, to the detriment of independence Requested mattress removal after 3.5 weeks

## Significance

- Trends indicate the importance of including pressure injury prevention education to promote changes in behaviour.
- The primary study will fill a gap in the available literature with regards to the use of mattress support surfaces in a domiciliary setting and the comparative effectiveness of active and reactive mattresses.

## Conclusion

- Research in a domiciliary setting can be challenging however identifying difficulties through a feasibility study allows for these to be managed before commencing a larger study.
- Preliminary results indicate the benefits of pressure injury prevention education on the uptake of prevention strategies and awareness
- Firm conclusions are unable to be drawn relating to the effectiveness of the pressure mattresses for wound healing.
- Changes to the proposed methodology have been identified to improve participant recruitment and to aid treatment team engagement

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References



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