START STUDY: AN RCT TO COMPARE THE EFFECTIVENESS OF A STATIC AIR MATTRESS VERSUS AN ALTERNATING AIR PRESSURE MATTRESS TO PREVENT PRESSURE ULCERS

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Background

- Prevalence of pressure ulcers in European nursing homes: 6,4% - 31,4%.
- Recommendations of international guidelines for pressure ulcer prevention: 1) rigorous and regular risk assessments, 2) regular repositioning, 3) skin care, and 4) support surfaces.
- A variety of support surfaces is available. Evidence about the difference in effectiveness between static air support surfaces and alternating pressure air support surfaces is lacking because of methodological limitations and large heterogeneity in study outcomes.

Aim

- To compare the effectiveness and cost between a static air mattress and an alternating air pressure mattress to prevent pressure ulcers category II-IV in high-risk nursing home residents.

Methods

- Design: Multicentre Prospective Randomized Controlled Clinical Trial (Trial registration: NCT03597750).
- Convenience sample of 26 Belgian nursing homes (n= 308 residents).
- Inclusion criteria: 1) high risk for pressure ulcer development (Braden score ≤12 and/or Braden subscale Mobility ≤2 and/or non-blanchable erythema), 2) being bedbound and/or chairbound, 3) > 65 years, 4) using an alternating air pressure mattress.
- Randomisation (1:1) at resident level in two groups:
  - Experiment: Static air support surfaces (Repose® mattress overlay, Repose® cushion, Repose® wedge or foot protector).
  - Control: Care as usual (Alternating air pressure mattress, usual pressure relieving cushion, usual heel off-loading device).

Results

Primary outcomes

- Pressure ulcer incidence.

	Total n=308		Experiment n=154		Control n=154		
	%	n	%	n	%	n	p
Cat. II – IV	8,4	26	5,2	8	11,7	18	**0,04**[a]
Cat. II	6,8	21	3,9	6	9,7	15	**0,04**[a]
Cat. III	1,0	3	1,3	2	0,6	1	1,00[b]
Cat. IV	0,6	2	0,0	0	1,3	2	0,50[b]

[a] Chi-square test, [b] Fisher exact test.

- Pressure ulcer incidence density:
  - Experiment: 0,41 / 100 observed days.
  - Control: 0,89 / 100 observed days.

Secondary outcomes

- Median time to develop a new pressure ulcer category II-IV (Mann-Whitney U = 37; p = 0,05):
  - Experiment: 10,5 days. (IQR 1 – 14)
  - Control group: 5,4 days. (IQR 1 – 12)
- The probability to remain pressure ulcer free between the two groups. (Log-rank X = 4,051, p = 0,044)
- Purchase costs of the support surfaces.

	Lifespan	
	2 years	9 years
Experiment	€ 0,20*	€ 0,74*
Control	€ 1,87*	€ 2,28*

* € per patient per day

Future steps

- The selection of a support surface for each individual patient involves various factors and is rather complex. International guidelines developed recommendations for the selection of support surfaces.
- Our findings suggest that the principles of pressure reduction in a static air mattress are more effective compared to an alternating air pressure mattress.
- Static air support surfaces are to be considered to prevent pressure ulcers alongside alternating air pressure support surfaces.

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