

Preventing Skin Damage in Hospitalised Patients - A Journey from Gap Analysis, to Learning Needs and Clinical Trials

Summary

Patient safety is a fundamental principle in healthcare which equates to preventing patient harm such as **hospital-acquired skin injuries**. Evidence-based Acute Respiratory Distress Syndrome (ARDS) care, such as the timely placement of critically ill patients in the prone position is a life-saving intervention but poses significant challenges, particularly concerning skin integrity. Across five interconnected studies, this thesis explores the educational, procedural, and preventive strategies required to optimise care for acute care and prone-positioned patients while minimising the risk of pressure ulcers (PUs) and other forms of skin damage.

Collectively, these studies contribute to a holistic approach to addressing the dual challenges of patient safety and care complexity for **hospitalised and prone-positioned patients**. They underscore the importance of evidence-based guidelines, accessible educational resources, and competency-based training to reduce preventable harm. The findings highlight that patient safety in the context of prone positioning (PP) is contingent on equipping clinicians with the knowledge, skills, and tools to manage the complexity of care. The development of simulation videos, the **PRONect Education Hub**, and using silicone foam dressings for qualifying patients exemplify evidence-informed strategies to reduce adverse outcomes, enhance quality of care, and improve patient safety. These initiatives provide a pathway for healthcare providers to navigate the inherent complexity of PP while maintaining a commitment to harm reduction and the highest standards of patient care.

Anika Fourie

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Supervisor

Prof. dr. Dimitri Beeckman - Ghent University, Ghent, Belgium

Co-Supervisor

Prof. dr. Amit Gefen - Tel Aviv University, Tel Aviv, Israel

Members of the Examination Committee

Prof. dr. Zena Moore – Royal College of Surgeons in Ireland, Dublin, Ireland

Prof. dr. Mieke Embo - Ghent University, Ghent, Belgium

Prof. dr. Dominique Benoit - Ghent University Hospital, Ghent, Belgium

Prof. dr. Sebastian Probst - HES-SO University of Applied Sciences and Arts Western Switzerland, Geneva, Switzerland

Prof. dr. Hilde Beele - Ghent University, Ghent, Belgium

Summary of studies:

Chapter	Title	Methodology/Description
Chapter 2 Study 1 (PRONect)	Skin damage prevention in the prone ventilated critically ill patient: A comprehensive review and gap analysis (PRONect study).	A gap analysis methodology was applied. The methods included a 1) comprehensive search and evaluation of proning and skin care guidelines, 2) an extensive search and listing of equipment and educational resources, and 3) international expert consultation.
Chapter 3 Study 2 (PRONect)	Exploring the learning needs of clinicians in Belgium and Sweden regarding prone positioning and skin damage prevention: A qualitative study.	This study used a qualitative methodological framework and employed an exploratory design. The individual semi-structured interviews (n = 20) were thematically analysed.
Chapter 4 Study 3 (PRONect)	Development of digital educational material regarding prone positioning and skin damage prevention – the PRONect Education Hub.	A descriptive article on the design and development of the PRONect Education Hub detailing the procedures from conceptualisation to execution of the educational materials at www.pronetection.com .
Chapter 5 Study 4 (PRONect)	Enhancing prone positioning and skin damage prevention education: A randomised controlled non-inferiority trial comparing a digital education hub (PRONect) and a traditional lecture on final-year nursing participants' confidence and knowledge.	A non-blinded, parallel-group, non-inferiority study with equal randomisation (1:1 allocation) was conducted at two nursing schools in Belgium. (n = 80)
Chapter 6 Study 5 (Device trial)	Silicone adhesive multilayer foam dressings as adjuvant prophylactic therapy to prevent hospital-acquired pressure ulcers: A pragmatic non-commercial multicentre randomised open-label parallel-group medical device trial.	Multicentre, randomised controlled, medical device trial conducted in eight Belgian hospitals. At-risk adult patients were centrally randomised (n = 1,633) to study groups based on a 1:1:1 allocation: experimental group 1 (n = 542) and 2 (n = 545) - pooled as the treatment group - and the control group (n = 546). Experimental groups received PU prevention according to hospital protocols, and a silicone foam dressing on these body sites. The control group received the standard-of-care. The primary endpoint was the incidence of a new PU category 2 or worse at these body sites.

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CONTACT

Department of Public Health and Primary Care

Skin Integrity Research Group

Anika.Fourie@ugent.be

T +32 498 423 906

www.ugent.be