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Citation: McGraw, C. (2019). Nurses' perceptions of the root causes of community-acquired pressure ulcers: Application of the Model for Examining Safety and Quality Concerns in Home Healthcare. *Journal of Clinical Nursing*, 28(3-4), pp. 575-588. doi: 10.1111/jocn.14652

This is the accepted version of the paper.

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Permanent repository link: <https://openaccess.city.ac.uk/id/eprint/20187/>

Link to published version: <https://doi.org/10.1111/jocn.14652>

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Title: Nurses' perceptions of the root causes of community-acquired pressure ulcers:
Application of the Model for Examining Safety and Quality in Home Care

Running title: Causes of community-acquired pressure ulcers

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Conflict of Interest Statement: The author has no conflict of interest to declare.

Funding Sources: This study was internally funded by City, University of London as part of the Research Pump-Priming Fund.

Nurses' perceptions of the root causes of community-acquired pressure ulcers: Application of the Model for Examining Safety and Quality in Home Care

Abstract

Aims and objectives: The aim was to explore how the context of care influences the development of community-acquired pressure ulcers from the perspective of nurses working in home healthcare settings. The objectives were to identify and categorise the factors perceived as contributing to the development of these ulcers using the Model for Examining Safety and Quality Concerns in Home Healthcare, and to explore how these risks are managed in practice.

Background: Pressure ulcer reduction is a priority in both hospital and community settings. Evidence suggests the factors affecting safety and performance in community settings are not the same as in hospital. However, research pertaining to pressure ulcer risk management has predominantly been undertaken in hospital settings.

Design: The study was framed by a qualitative exploratory design.

Methods: Semi-structured interviews were conducted with a purposive sample of 19 registered nurses recruited from an independent regional tissue viability network and five community nursing provider organisations in London.

Results: The experiences and perceptions of participants mapped onto the components of the Model for Examining Safety and Quality in Home Care: patient characteristics, provider characteristics, nature of home healthcare tasks, social and community environment, medical devices and new technology, physical

environment, and external environment. Four strategies to address identified risks were established: behavioural interventions, technical interventions, safeguarding interventions, and initiatives to promote better integration between health, local authorities and families.

Conclusion: Understanding the complex interplay between people and other elements of the healthcare system is critical to the prevention, management and investigation of pressure ulcers. This study has illuminated these elements from the perspective of nurses working in community settings.

Relevance to clinical practice: Further consideration should be given to the importance of place when both developing risk management strategies for pressure ulcer prevention and learning the lessons from failure.

Key words:

- Pressure ulcer
- Community nursing
- Community care
- Patient safety

What does this paper contribute to the wider global clinical community?

- Despite an increase in healthcare provision in community settings, the research literature on pressure ulcer prevention has predominantly focused on hospital settings. The extent to which this literature can be generalised to community nursing practice is limited by differences in the context of care.
- To conceptualise the factors that contribute to community-acquired pressure ulcers, the study was an early adopter of the Model for Examining Safety and

Quality in Home Healthcare – a model explicitly developed for application in home and community settings

- The findings provide an insight into the unique dimensions of risk in home healthcare settings, which may help to inform the development of risk management strategies for pressure ulcer prevention and lessons being learnt from failure.

INTRODUCTION

A pressure ulcer is a localised injury to the skin or underlying tissue, which is caused by pressure, or pressure in combination with strain between the skeleton and a support surface. Pressure ulcers are classified according to the International Pressure Ulcer Classification System (National Pressure Ulcer Advisory Panel (NPUAP), European Pressure Ulcer Advisory Panel (EPUAP) and Pan Pacific Pressure Injury Alliance (PPPIA), 2014). This system defines four levels of injury from stage 1 (non-blanchable redness of intact skin) to 4 (full thickness tissue loss with exposed bone, tendon or muscle). It also identifies unstageable injury (full thickness tissue loss in which the base of the ulcer is covered by slough and/or eschar) and deep tissue injury (intact or non-intact skin with localised area of persistent non-blanchable deep red, maroon, purple discolouration, where the wound may evolve rapidly to reveal the actual extent of the tissue injury or resolve without tissue loss). Patient risk factors for their development include immobility, poor general skin status, a history of previous ulceration, and ineffective tissue perfusion (Coleman et al., 2013).

Pressure ulcers occur across settings and can be categorised as either hospital-acquired or community-acquired. Most studies examining their epidemiology have been conducted in hospitals. For example, Tubaishat et al. (2017) conducted a systematic review of the research literature to determine their prevalence amongst adult patients in hospital and reported rates between 6% and 18.5%. Prevalence in community settings is less well understood (Hopkins & Worboys, 2015); however, a recent retrospective medical record review of adults admitted to a hospital in New

England in the United States (US), suggested the rate was 7.4% (Corbett et al., 2017).

In recent years, pressure ulcers have gained political importance (Worsley et al., 2016) because they hinder recovery from illness and are a significant source of physical, social and psychological burden to both patients (Gorecki et al., 2014) and family caregivers (Rodrigues et al., 2016). They also have implications for healthcare providers including increased expenditure on treatments (Demarré et al., 2015) and financial penalties in the form of withheld Medicare reimbursement charges in the US (Blumenthal et al., 2015) and ineligibility for additional payments through the NHS Commissioning for Quality and Innovation Payment framework in England in 2014/15 (NHS England, 2014).

The key steps to preventing pressure ulcers are to identify patients at risk and implement preventative strategies. In the US, England, Scotland, and Wales, healthcare providers have adopted the S-SKIN Bundle (Gibbons et al., 2006; NHS Midlands and East, 2012; Healthcare Improvement Scotland, 2011; Abertawe Bro Morgannwg University Health Board, 2009), which comprises the elements essential to pressure ulcer prevention (see Table 1). However, considerations of when pressure ulceration is preventable has been a source of contention for a number of years (see, for example, Dimant, 2002). Given the importance of the issue, the NPUAP hosted a multidisciplinary conference to establish consensus on whether there are individuals in whom pressure ulcer development may be avoidable. The outcomes of this meeting are summarised in Table 2.

In the US, all stage 3 and 4 pressure ulcers acquired after admission or presentation to a healthcare setting are deemed '*unambiguous, largely preventable, and serious, as well as adverse, indicative of a problem in a healthcare setting's safety systems, or important for public credibility or public accountability*' (National Quality Forum, 2011: 2). When such an event does occur, a retrospective root cause analysis (RCA) will be performed to identify underlying causal factors (Chen et al., 2015). In England, all pressure ulcers are recognised as patient safety incidents and reported using the National Learning and Reporting System and those meeting the threshold of a Serious Incident are investigated using a RCA approach (NHS England Patient Safety Domain, 2015).

The increased provision of healthcare in the home rather than in hospital is a policy priority in many countries. However, community-acquired pressure ulcers present a threat to patient outcomes and healthcare costs. The development of strategies both to prevent and control the risk of harm and to promote learning from adverse events is crucial to continually improving person-centred, safe and effective healthcare.

This paper contributes an empirical understanding of the unique dimensions of risk pertaining to the development of community-acquired pressure ulcers and highlights the factors that need to be considered when devising pressure ulcer prevention and management initiatives, and to maximise learning during their investigation.

BACKGROUND

Human factors research focuses on interactions between people and other elements of a system, with the goal of optimising safety and performance. Human factors experts in complex high technology industries such as aviation have developed frameworks to identify contributory factors underlying adverse events. These

frameworks have both proactive and reactive applications. In the proactive mode, they are applied to prevent and control the risk of harm occurring in the first instance whilst in the reactive mode, they are applied to help learn the lessons from failure. Such frameworks include the Model of Threat and Error in Aviation (Helmreich, 2000).

These frameworks have been adapted and extended for application in healthcare. One influential model is the Framework of Contributory Factors Influencing Clinical Practice (Vincent, Adams and Stanhope, 1998), which was derived from medical publications on risk management and adverse incident investigations in complex high technology industries. It identifies seven major domains influencing risk and safety: institutional context, organisational and management, work environment, team, individual (staff), task and technology, and patient. Each domain expands to reveal a more detailed specification of the factors influencing risk and safety at each level. For example, team factors covers: verbal communication, written communication, supervision and seeking help, and team structure.

In its proactive mode, Vincent et al (1998) suggest the framework be applied as a template for designing and validating risk assessment instruments or used to design studies that examine the impact of the major factors and their components on actual patient outcomes. In its reactive mode, it is intended to guide the comprehensive investigation of adverse events across healthcare settings. The framework is integral to the London Protocol (Taylor-Adams and Vincent, 2001). The protocol is endorsed by the Government of Western Australia (Department of Health, Government of Western Australia, 2011), the World Health Organization (2012) and the National Patient Safety Agency (2008).

More recently, RCA frameworks have been adapted and extended for application in pressure ulcer investigations. These frameworks classify the generic factors contributing to adverse events, whilst incorporating standardised prompt questions relating to the elements essential to pressure ulcer prevention as set out in the S-SKIN Bundle. They are used in the investigation of both hospital-acquired and community-acquired pressure ulcers. One such framework is the Pressure Ulcer RCA Template (NPUAP, 2014). However, evidence suggests human factors in home healthcare are not the same as in hospital. Although many of the same risks and adverse events exist and occur in both settings, the context of care is different (Harrison et al., 2013).

[Human factors in home healthcare settings](#)

McGraw et al. (2008) considered the applicability of the Framework of Contributory Factors Influencing Clinical Practice in a study that sought to understand the circumstances in which the involvement of social care as well as home nursing services in medication-related activities for older people living at home might jeopardise patient safety. In the UK, healthcare is the responsibility of the NHS and community healthcare services are delivered by a range of providers including home nursing services (known as district nursing). Social care includes assistance with personal care activities such as eating and drinking, going to the toilet, washing and dressing, and the management of medication. In the absence of assistance from family or friends, these activities are the responsibility of local authorities, which commission personal care services (known as home care) from a range of internal/governmental (local authority) and external/non-governmental (commercial

and not-for-profit) providers. Home carers are not required to hold any formal qualifications and at entry level are paid little more than the national minimum wage.

Using data collected from interviews with community nurses, district nurses and home carers, McGraw et al. identified three unique features that affected medication safety in home healthcare: patients are in control of all decisions affecting the implementation of their prescribed treatment, patients do not experience around the clock nursing care or supervision, and personal care needs are usually met by family members or agencies operating at a distance from nursing services. The authors concluded that RCA frameworks derived from complex high technology industries and hospital settings are too narrow for application in the community. They argued that the causes of accidents are most likely to be identified by frameworks empirically derived from, and tailored to fit, the circumstances in which they are to be applied.

In relation to pressure ulcers, Bergquist-Beringer and Daley (2011) explored the factors that delineate interventions used to prevent pressure ulcers in the home as opposed to the hospital in the US. They conducted a focus group with nine wound care nurses and found interventions unique to home healthcare included assessment of patients' economic and insurance status to determine implementation options, assessment of caregiver's ability to manage pressure ulcer prevention, and collaboration with vendors to obtain preventative equipment.

McGraw and Drennan (2015) subsequently explored whether the frameworks used to investigate community-acquired pressure ulcers asked standardised prompt questions about patients being in control of decisions affecting the implementation of their prescribed treatment and questions about personal care needs being met by

family members or agencies operating at a distance from home nursing services. They conducted a documentary analysis of 15 frameworks used by community nursing services in the four geographical clusters of the NHS England Commissioning Board. All those retrieved were influenced by the London Protocol and only seven took account of the setting where the ulcer originated as being the home as opposed to the hospital.

Given evidence suggests human factors in home healthcare are not the same as in hospital and RCA templates do not routinely recognise the unique dimensions of risk in home healthcare settings, the aim of the study reported in this paper was to explore how the context of care influences the development of community-acquired pressure ulcers from the perspective of nurses working in home healthcare settings.

The study was internally funded by City, University of London as part of the Research Pump-Priming Fund.

METHODS

Theoretical model

The Model for Examining Safety and Quality Concerns in Home Healthcare (Henriksen et al., 2009) was used to conceptualise the factors that contribute to community-acquired pressure ulcers. Unlike the Framework of Factors Influencing Clinical Practice, the model was explicitly developed for application in home and community settings. It emphasises the interconnectedness of seven components: external environment, physical environment, medical devices and new technology, social and community environment, nature of the home healthcare tasks, provider characteristics, and patient characteristics. Each component expands to reveal

between five and eight subcomponents (see Table 3). For example, social and community environment includes: home culture, contact with family and friends, activity friendly settings, community centres, and transportation. Henriksen et al. argued that when the different components align, preventable adverse events may occur. Few examples of its application are described in the research literature. However, one notable exception is provided by Lang et al. (2015) who used the model to augment the analysis of data pertaining to how older people and caregivers experience the environment, equipment, and other tools that are available to them as they manage their medications at home.

The objectives of the study reported here were twofold: to identify and categorise the factors perceived as contributing to the development of community-acquired pressure ulcers using the Model for Examining Safety and Quality Concerns in Home Healthcare, and to explore how these risks are managed in practice.

Design

The study was framed by a qualitative exploratory design involving semi-structured interviews with a sample of registered nurses. Ethical approval was obtained from the School of Health Sciences Research Ethics Committee at City, University of London (Staff/15-16/16) and governance approval from the Health Research Authority (IRAS ID 204432).

Setting

The study was set in London where the former strategic health authority endorsed a pan-regional pressure ulcer RCA protocol. It was anticipated that nurses working in

London would be familiar with the protocol and have an opinion as to its fit in home healthcare settings.

Recruitment and sampling

Purposive sampling was used to select registered nurses with particular expertise in the prevention and management of pressure ulcers amongst adults living in their own home. Nurses were selected as the population of interest because they are the largest professional group in the community (NHS Digital, 2017). Eligible participants included community nurses, district nurses, tissue viability nurses and senior nursing managers. District nurses are community nurses with an additional post registration qualification and responsibility for the management of the district nursing team.

Volunteers were drawn from an independent regional tissue viability network and five community nursing provider organisations. The study was advertised at a network event and at team meetings within provider organisations. The presentations set out the purpose, methods and intended uses of the research and what participation would entail. In determining sample size, the guiding principle was one of data saturation.

Data collection

Data were collected in semi-structured interviews using a topic guide. Four overarching questions framed the guide:

- Tell me about a time when a patient on your caseload developed a community-acquired pressure ulcer

- How did the home care environment contribute to the development and management of this ulcer?
- How do you prevent and manage these ulcers in practice?
- Would current protocols for the investigation of pressure ulcers capture these factors? If not, what would the perfect protocol look like?

The guide was tested in pilot interviews with two nurses who shared similar characteristics as the intended sample and amended following their feedback and the interviewers own reflections.

Face to face interviews were conducted on site for participants recruited from the community nursing provider organisations. Telephone interviews were conducted with those recruited from the regional network. Informed consent was obtaining in writing for face to face interviews and orally for telephone interviews. The duration of interviews varied between 30 and 75 minutes. Data were collected during a four month period up to January 2017. All interviews were audio recorded. Data collection stopped when similar themes were reiterated by participants and no new insights were produced. Interviews were conducted by the principal investigator (a former district nurse) and an independent researcher (a former tissue viability nurse).

Data analysis

Audio recordings were transcribed verbatim. Transcription was undertaken by the principal investigator in order to quality check application of the topic guide and to determine when new insights were no longer being produced. The data were sifted and interpreted using the Framework Approach to qualitative data analysis (Ritchie and Spencer, 1994). This approach is appropriate where there are a priori

assumptions since it allows the analytical process to be informed by issues designated in advance as well as emergent concepts (Gale et al., 2013). In this approach, transcription is followed by six stages: familiarisation with the interview; coding; developing a working analytical framework; applying the analytical framework; charting data into the framework matrix; and interpreting the data. Given the first research objective was to use the Model for Examining Safety and Quality in Home Health Care to identify and categorise the factors that contribute to community-acquired pressure ulceration, the analytical framework was already established and, after the familiarisation stage, it was possible to move onto indexing transcripts using the components within the identified model. To address the second objective, which pertained to the management of identified risks in practice, all six stages of the Framework Approach were applied. Data analysis was undertaken by the principle investigator, who consulted with the independent researcher on matters relating to charting and data interpretation.

FINDINGS AND DISCUSSION

Nineteen nurses were interviewed, including 15 face to face interviews and four telephone interviews. Participants included three community nurses, two district nurses, ten tissue viability nurses and one senior nurse manager. An additional three participants worked in innovative pressure ulcer prevention posts (either clinical or policy coordination posts) and whilst all had previously worked as community or district nurses, none identified as such in their current role. Participants had been qualified as nurses for between two and 34 years (average 19 years) and working in community settings for between two months and 25 years (average 8 years).

The findings are reported and discussed in two parts. In part one, the first research objective is addressed. The discussion explores how the study findings reflected all seven components within the Model for Examining Safety and Quality in Home Health Care and several subcomponents. Whilst data did not map against every subcomponent, this was expected as the findings represent participants' subjective experience of events. The findings are presented under each of the major components with the subcomponents presented in bold. Bold italics are used to denote novel subcomponents not featured in Henriksen et al. The second research objective is addressed in part two, where four categories of intervention are presented: behavioural interventions, technical interventions, safeguarding interventions, and initiatives to promote better integration between health, local authorities and families.

[Model for Examining Safety and Quality Concerns in Home Healthcare](#)

[Patient characteristics](#)

Participants highlighted a number of patients who were unable to play an active role in pressure area care; patients who found repositioning, staying hydrated and skincare either complex concepts to understand or difficult actions to undertake.

Patient characteristics identified as either barriers or enablers to active participation were: physical and sensory capacity, cognitive capacity, motivation and attitude, and health knowledge and literacy.

In relation to **physical and sensory capacity**, patients who were clinically frail were often unable to perform health enhancing activities due to loss of muscle power and strength:

He had a recent admission because he was very frail and unwell... His mobility was really, really poor [and] he ended up getting a grade three pressure ulcer on his sacrum and ankle. He then started to get a deep tissue injury. There were signs of pressure damage there because he couldn't turn himself in bed (P04)

Pain and discomfort also limited mobility and tolerance to repositioning. Research suggests a high prevalence of pressure ulceration amongst palliative care patients (Carlsson and Gunningberg, 2017). Skin changes at the end of life were a source of concern to participants, who recognised that turning a patient in bed can both relieve and cause pain. Participants described how they and their colleagues prioritised patient autonomy over pressure ulcer prevention at the end of life:

I had a 35 year old lady, she died of cancer with a pressure ulcer because she was refusing to be moved. Regardless of what equipment we put in place... she just didn't want to be touched (P12)

In contrast, the absence of pain in patients with spinal cord injury could be an issue due to damaged nerve pathways not alerting the brain to skin damage. This was compounded by the fact that many ulcers developed in anatomical locations that were not readily visible such as the sacrum or heel.

In relation to **cognitive capacity**, patients with dementia were often unable to participate in pressure area care. Participants described how these patients sometimes refused assistance with activities critical to maintaining skin integrity:

She has [home carers] three times a day... But she has got dementia... because of the dementia she thinks that she's independent... but then the carers

come in she won't let them assist with washing... They are not checking her pressure areas all the time because she is refusing a wash (P16)

Refusal would on occasions be accompanied by emotional distress and caregivers found it difficult to both promote patient comfort and prevent pressure damage:

This is an elderly lady with cognitive impairment – possibly dementia. She went on to get a pressure ulcer on the planter aspect of one of her heels... Some of the issues and challenges were that she would become enormously distressed if she were put to bed. She would become so distressed that she was in a recliner chair She would become distressed if you reclined that chair. And when I say distressed, she would be screaming and shouting (P06)

Patients with cognitive impairment were not alone in resisting assistance with or advice regarding pressure area care. Participants suggested patients with mental capacity often intentionally chose not to follow their recommendations. In relation to **motivation and attitude**, participants frequently referred to patients with spinal cord injuries who would stay in a seated position for an extended period of time. For the most part, these patients were well informed about the risk of pressure damage:

We have got other patients who are spinal cord injured, very intelligent... know what they are doing (P06)

For some, **health knowledge/literacy** led to a lasting commitment to apply recommended practices relating to repositioning for example. However, many of those escalated by community nurses to tissue viability nurses and nurse managers were those that did not adopt health promoting behaviours. Non-adherence was largely attributed to perceptions of risk:

Spinal cord injury patients – what we would deem as the best care for them isn't really their idea of what they want to be doing with their daily life. They take risks. They are risk takers and put themselves into situations that will cause harm (P09)

These findings corroborate previous research that describes a good level of general understanding of the causes of pressure ulcers amongst young men with spinal cord injury (Gibson, 2002). However, in the current study, even when patients had previously experienced ulceration, health enhancing behaviours were not always adopted:

One in particular chooses not to do what he should do... It's almost like he is reaching a point where he is going from home to pressure ulcer to hospital for surgical repair to home. So we are looking at a possible third admission for surgical repair in the space of two years. So this is his cycle at the moment... And he is fully aware of the implications (P06)

The cycle described here is consistent with the research literature. For example, Schyvers et al. (2000) found patients with spinal cord injury who have undergone surgical treatment for their pressure ulcer were at high risk of recurrent hospital admissions and recurrent ulcers at the same site or a different site.

Provider characteristics

Health and social care services are commissioned from a diversity of organisations and delivered by a range of providers. Whilst nurses were the focus of this study, key providers identified by participants included general practitioners, podiatrists, physiotherapists, and home carers. In particular, participants emphasised the role of

home carers and family caregivers. Provider characteristics highlighted by participants as either barriers or enablers to pressure ulcer care were: health knowledge/literacy, and caregiving skills.

Health knowledge/literacy refers to the degree to which an individual has capacity to obtain, process, and understand the information needed to make appropriate health decisions. Participants suggested there were often deficits in caregivers' knowledge pertaining to the significance of skin changes.

Community and district nurses explained that they would often only visit patients with minimal nursing needs weekly or even monthly. In the intervening days or weeks, patients' health status and home situation could change. During this period, daily visitors such as home carers and family caregivers were expected to observe for changes in risk status and report early signs of skin damage. However, participants described occasions when home carers and family caregivers neither recognised the significance of early skin changes nor escalated them to healthcare providers in a timely fashion:

We had some cases of pressure ulcers that were identified by a carer on [the] Wednesday and because the nurse would be coming the following week... they did not report to anybody, they didn't escalate and by the time the nurse came there was a necrotic wound (P19)

The ability to detect skin changes was considered important not only to prevent deterioration but because early skin changes may be reversed if rapid interventions are put into place.

Participants also highlighted deficits in caregivers' knowledge pertaining to dynamic pressure relieving mattresses. These high-tech devices incorporate air-filled sacs

that are either inflated at a constant pressure or which sequentially inflate and deflate. Fitted sheets with elasticated retention edges are contraindicated with these mattresses because they create a hammocking effect in which the fabric bridges across the deflating cells and counteracts the potential pressure reduction associated with normal cell deflation (ArjoHuntleigh, 2011). Similarly, evidence suggests absorbent pads and multiple layers of linen have an adverse effect on pressure redistribution (Williamson et al., 2013). Participants described errors involving both fitted sheets and layers of linen:

We'll often go into a patient who has got a pressure relieving mattress but they have put a nice big fluffy thing over it to make it more comfortable (P16)

Dynamic mattresses are also dependent on electrical power. Interruptions in power supply lasting no more than a few minutes may not be especially important; however, there were occasions when interruptions of longer duration caused partial or complete deflation. In the event of complete deflation, the patient would lie on little more than the bedframe until help arrived. Loss of power sometimes resulted from the erroneous actions of family caregivers:

You've got family members who are very caring [and] usually very astute but make a mistake – we had one that turned a mattress off one night because she thought the battery needed to rest... and her mum got a pressure ulcer from that one night (P06)

In relation to **caregiving skills**, effective communication was considered fundamental to person centred care. Enhanced communication skills were especially important in the context of dementia care. Participants identified

occasions when home care providers were unable to connect with patients who were cognitively impaired:

This was a lady who was living on her own in warden controlled flats with progressing dementia, which led to her [to become] increasingly combative with carers.... If she was saying 'don't come near me, I don't want you near me, I don't want you to change me, I don't want food' would accept that [on face value], 'if she says no, she means no and that's it'. The district nurses arrived one day to see her and found a very strong smell of urine. I think they had arrived for routine B12 or something. She was sitting in what was perhaps a two day old pad and when they checked her skin – with a bit of coaxing and a little bit of time sitting and chatting you can get her to do most things – they found a category three pressure ulcer (P02)

Deficits in health knowledge/literacy and caregiving skills were largely attributed to limited education and training:

But going back to [home] carers, the issue is knowledge and skills because they don't have training, mandatory training [on pressure ulcers]... You get people who have been in caring roles... for five, ten years and they have never had prevention of pressure ulcer training (P09)

Over the last 10 years, the care needs of older and disabled people living in their own homes have become increasingly complex. Many caregiving activities fall at the border of nursing care and personal care. In this study, the knowledge and skills of caregivers did not appear to have kept up with demographic changes and changes to the health and social care architecture. These findings resonate with the research literature. For example, Manthorpe and Martineau (2017) conducted a documentary analysis of local serious case reviews to ascertain what recommendations are made

about pressure ulcer prevention and treatment at home. They found recommendations included calls for greater training on pressure ulcers for home carers.

Nature of home health care tasks

Two pressure ulcer prevention and management tasks were identified as problematic: the inspection of pressure areas in intimate anatomical locations, and engaging patients in difficult conversations pertaining to behaviour change.

Pressure ulcers often occur on the sacrum. **Intimate care** is defined as *'the care tasks associated with bodily functions, body products and personal hygiene which demand direct or indirect contact with or exposure of the sexual parts of the body'* (Cambridge and Carnaby, 2000: 6). The location of pressure points on the body was considered important, especially when nurses saw themselves as guests in patients' homes. When these factors combined, they were considered barriers to nurses inspecting skin integrity:

I think with the first gentleman, going in there in the evening, the family is having dinner, [the night nurses] are stepping on their toes; you are disrupting the whole evening to strip someone naked to check their skin (P12)

Commentators argue that the roles of nurses and patients are less subscribed in the territory of the patient than in the hospital, and that their relationship is often more variable and difficult to negotiate (Peter, 2002). This implies a lessening of the authority of the nurse over the patient. Öresland et al (2008) explored the roles nurses construct when caring for patients in their own home and identified two positions: guest and professional. They found nurses made a choice between these

positions because it was impossible to be both at the same time. In the former, it was not appropriate to 'barge in' and 'take charge'. Instead, boundaries needed to be respected. In the current study, tissue viability nurses argued that their community nurse colleagues adopted the role of guest and as such found it difficult to initiate the inspection of intimate anatomical locations on a first visit:

Firstly, privacy and dignity; so if someone strange walked into my house and said 'I want to see your bottom', I probably wouldn't want that. I think there is that barrier (P13)

Tissue viability nurses also contended that community nurses perceived conversations with patients about behaviour change to be **difficult conversations**. They suggested that as guests, community nurses sought symmetrical relationships with patients and believed difficult conversations had the potential to undermine these relationships:

I did find that some of the community nurses were not happy to speak so frankly to patients... I think, what you get with a lot of community nurses is that they think they have been invited into the home, 'we're guests, we can only advice, we can't insist'... (P01)

According to tissue viability nurses, there was an expectation amongst community nurses that these conversations would be initiated by their tissue viability colleagues:

And the confidence thing as well, I have the confidence to say 'you do realise this could get infected and you could die. You know superman, even superman isn't immune to pressure sores... it was the pressure ulcer that killed him'. Or [the community nurses] don't want to be the bearer of bad news, it's like diabetic feet, 'if

you don't do this you are going to lose your leg'. I have patients that say to me, 'why are you scaring me?' It's reality, its fact, 'I'm not trying to scare you' (P10)

On one hand, this reflects the professional role identified by Öresland et al (2008) where nurses – in this case tissue viability nurses - took a professional position or decisive stance when the situation demanded. On the other hand, there was no evidence from the interviews with community nurses that they felt reliant on tissue viability nurses to lead difficult conversations. It is also important to be mindful that any focus on blame may result in defensive behaviour, which could limit efforts to improve care.

Physical environment

Participants described how the **space and layout** of the home posed a novel challenge to providing pressure reducing support surfaces. In particular, insufficient space hindered the placement of hospital beds in either small bedrooms or bedrooms shared with a partner:

He's at home now... The sad thing was [his wife] was sleeping in a different room because he needed a hospital bed (P04)

In the UK, health services and local authorities have statutory obligations to provide equipment to help people maintain their health and independence at home. Hospital beds are provided on loan but are not residential in scale and impact on the use of space. In the context of pressure area care, they were required to support some pressure relieving mattresses. They were also required to support the provision of automated lateral turning devices; that is programmable devices that lifted and

turned patients by inflating air cells within a platform situated between the bedframe and mattress.

Participants reported that due to space limitations, domestic furniture needed to be moved, stored or thrown away to accommodate the hospital bed. Often the only option was to have the hospital bed in a spare bedroom or in the absence of a spare room in the lounge:

I guess in London, people don't generally have much room in their house – especially around here, their houses or flats are really quite small... I think that is very common, people end up having to put a hospital bed in their lounge (P05)

The logistics of rearranging furniture and reconfiguring the layout of the home could contribute to delays in the provision of essential equipment and lead to pressure ulceration:

Because of this acute condition she became bed bound and obviously she needs equipment and there was a delay in the delivery of the equipment and the patient developed a pressure ulcer on the sacrum....for the patient to accommodate the bed they had to remove some furniture in the place (P11)

Whilst participants nearly always talked about lack of space presenting a problem, one participant recalled an unusual situation where too much space posed difficulties:

We always had an issue with pressure relieving equipment with her because it was a lovely big house... and at various parts of the day she would like to sit [in various locations]... and when we got there she was never sitting on the pressure relieving equipment even though we had given her more than one cushion. In the

mornings she would stay upstairs... [Then] at certain parts of the day she would like to sit by the patio doors and at other parts of the day she would sit in the kitchen....And the daughter used a frame as well; I think there was an arthritis type issue. So neither of them could really pick up a cushion and take it to wherever they needed it... (P14)

Most homes are not designed to support health promoting behaviours or the provision of healthcare services (Sanford, 2012). Difficulties posed by the physical environment in this study were largely unamenable to intervention at the individual or mezzo level.

Social and community environment

Participants described how social and cultural factors influenced health behaviour. These factors included contact with family and friends, and home culture.

Participants reported a tension between community integration and pressure area care. Attempts to restrict the amount of time patients spent seated rather than in a recumbent position were often frustrated by **contact with family and friends**:

One on the ear... to do with... a [headrest] on the wheelchair. She's got some neurological problem [and] constantly leans on her side so... the [headrest] gave her a grade three on the ear. [It could have been prevented] if she didn't get in the wheelchair but she goes out to see her mum. Dad takes her out so she can see the mum who apparently has the same illness and is in a nursing home (P17)

Community integration is a key rehabilitation goal for people with long term conditions and traumatic brain or spinal cord injury. It emphasises the importance of

living arrangements, consumer assertiveness, outdoor mobility, and out of home activity (Nunnerley et al., 2012). Participants generally accepted that whilst failure to rest posed various liabilities, alternative behaviours were a buffer against social isolation.

Home culture was also a potential barrier to effective pressure area care. Culture refers to shared beliefs, knowledge, feelings and objects that have a motivational quality (National Research Council, 2011). Home culture was seen to influence the layout, meaning and functions of the domestic space. For example, participants described how patients and their families sometimes resisted the provision of hospital beds because of the potential impact on the layout and appearance of the home:

They tried multiple times to deliver this equipment and every time he would refuse when it came.... We would say we need to get someone in and [move this furniture to make space for the hospital bed] and that was extremely upsetting for him because that is his home and that is how he likes to live and how he likes his things (P05)

These findings echo previous research that examined the home as a site of long term care, which found that patients often regarded healthcare equipment – with its fundamentally institutional feel - as a violation of their aesthetic tastes (Angus et al, 2005). In the current study, patients would either refuse equipment or put it to another use:

People don't like their equipment, they don't like their [pressure relieving] cushions, they don't use their cushions... or the dog sleeps on their cushion. Somebody with a dynamic mattress actually used the pump in their fish pond (P03)

A second feature of home culture was the maintenance of order and cleanliness. Different households held different traditions pertaining to these dimensions of domestic life. Participants regarded dirty homes as a threat to effective pressure ulcer management:

The state of some of the houses. We went into a house and we were putting on [negative pressure wound therapy] for a patient but I had never seen such a house; a house that was so dirty, a thick layer on every surface, dirt on the floor. We obviously can't put anything down anywhere – we were trying to do a sterile dressing (P05)

Similarly, chaotic features of the home environment such as debris and clutter were a source of frustration:

[She was sitting in a chair]... They lived in the most cluttered house imaginable; you could barely move in there but we knew we had to get a hospital bed in there so we told the daughter you have to move everything out of this room. We got a profiling bed and an air mattress and four of us had to go in and physically lift her... And we found this horrendous pressure ulcer (P03)

Lack of care of one's living environment has been identified as a source of difficulty for community nurses in the research literature. For example, Terry et al (2015) investigated the types of workplace health and safety issues rural community nurses encounter in Tasmania. They identified problems pertaining to homes that were filthy and untidy with unpleasant odours.

Medical devices and new technology

Medical devices and new technologies pertaining to pressure area care included hospital beds, pressure relieving mattresses and armchair cushions, automated lateral turning devices, and negative pressure wound therapy pumps. Participants indicated mattresses and cushions were not only the most common but the most problematic with issues encountered in relation to power outages and maintenance.

Electrical power was at times interrupted as a result of network **power outages** caused by factors such as severe weather and animal strikes:

Power cuts can be an issue with mattresses. We've had a few where mattresses have failed – which is different to the acute side [where] you've got a generator [and] the mattress is alarming and someone is there to hear it alarm and act upon that. At home you've got some lying on that mattress all of the night – it can alarm but nobody can act on it (P06)

Medical devices required regular **maintenance**. Poorly maintained equipment could be ineffective and potentially hazardous. When a patient purchased their own equipment, the responsibility for ensuring its upkeep lay with the patient themselves. Participants raised concerns regarding the maintenance of privately purchased equipment:

She'd bought [the pressure relieving cushion] herself. She wouldn't have anything we offered... She bought her own but the cat had punctured it so there were bits of sticky tape all over it (P10)

If the healthcare provider supplied equipment, they were responsible for its upkeep. Most organisations contracted private providers to deliver, install, collect, service and repair large items such as beds and mattresses.

External environment

The key external force pertinent to pressure area care was **economic pressures**. In England, unlike healthcare, which is free at the point of need, personal care is means tested. Faced with financial austerity and soaring demand caused by the increasing prevalence of both long term conditions and an ageing population (National Audit Office, 2014), most local authorities limit the amount of publically funded personal care they will provide. Both means testing and local authority caps on the number of home care visits each day were cited by participants as barriers to effective pressure area care.

In relation to means testing, participants recalled occasions when patients and/or family members who held power of attorney were unwilling to make a financial contribution to care:

You also get quite a few people who refuse to pay for care and it can be complicated if they have been through rehab services where the care is free for the first six weeks and then they have to pay for care (P08)

More frequently, participants complained about caps on the number and frequency of home care visits. The number of visits allocated per patient was limited to a maximum of four in 24 hours:

I personally think it is these people who live alone and have got carers who are spaced out [across the day] because once that carer has left at 08:00, the next call isn't until 12:30. If that patient, as soon as you have washed the patient, you

have fed them, the patient opens their bowels, then they stay on that dirty pad for 3.5 hours and that puts them at risk (P18)

Night times were particularly difficult:

Patients at home might have their last visit by carers at 20:00 and won't get their next visit by carers until 08:00 – so they will be 12 hours in the same position in the same wet pad; whereas in hospital that can be changed, position and pad at the right time (P15)

How to fund the social care needs of England's ageing population is a question that is attracting increased levels of public scrutiny. The impact of means testing and self-financing of residential care home placements is well documented and led to the introduction of deferred payment agreements (Mosseri-Marlio & Vasiler, 2017). However, the impact on uptake of personal care services by older and disabled people living at home is less well known.

Management of risk

Behavioural interventions

Behavioural interventions are designed to affect the actions that individuals take with regards to their health. They were adopted to address issues pertaining to patient characteristics (motivation and attitude) and social and community environment (contact with family and friends, and home culture). There was one example of a community level intervention and that was awareness raising at a local shopping centre on the annual National Stop the Pressure Day. Interventions were primarily implemented at the individual level where patients with mental capacity who were at risk of pressure ulceration or who had a pressure ulcer were encouraged to do

something to reduce their level of risk. Examples of behavioural interventions included patient education, the development of patient specific self-management plans, and the provision of non-concordance letters.

The non-concordance letter was an initiative launched by one of the five community provider organisations. The letter set out the recommendations made by the nursing team but that had been declined by the patient (for example, the provision of equipment or limiting the amount of time the patient spent seated). It emphasised the risks associated with the status quo and was sent to both the patient and their general practitioner. Some participants were strong advocates of the letter both in terms of increasingly patient accountability and encouraging behaviour change conversations to change place. However, others were less enthusiastic and expressed some concern as to its potential impact on symmetrical relationships as well as the potential to discourage nurses revisiting behaviour change conversations on an ongoing basis.

Technical interventions

Technical interventions were adopted to address problems pertaining to patient characteristics (physical and sensory capacity, and cognitive capacity), medical devices and new technology (power outages) and external environment (economic pressures). They included the provision of automated lateral turning devices, hybrid pressure relieving mattresses and digital screens that provided regular personalised prompts for the prevention of pressure ulcers. The former were supplied to patients who could not reposition themselves in bed and were unable to tolerate manual repositioning. They were also used to support patients who required assistance turning more than four times a day. However, not all organisations had equal access

to turning devices. At the same time, those participants that did have access expressed concern that their provision might encourage local authorities to further limit the number of home care visits provided each day.

Hybrid mattresses were proposed as a potential solution to power outages. These devices combined the pressure relieving components of both static and dynamic mattresses, which meant that if the dynamic component failed, the patient would be supported by the static component. As with the turning devices, not all organisations had access to these mattresses.

Digital screens were being trialled by one organisation participating in the study. The screens were intended for patients who were independently mobile but who may not remember to reposition regularly, stay hydrated etc. due to mild cognitive impairment.

Safeguarding interventions

Safeguarding adults means protecting a person's right to live in safety, free from abuse and neglect; this includes freedom from avoidable pressure ulceration.

Safeguarding procedures were initiated in response to issues pertaining to provider characteristics (health knowledge/literacy, and caregiving skills) and external environment (economic pressure). For example, when home carers failed to escalate skin changes and when family members who hold power of attorney were unwilling to make a financial contribution to care.

Initiatives to promote better integration between health, local authorities and families

Initiatives to promote better integration between health, local authorities and families were devised to address issues pertaining to provider characteristics (health

knowledge/literacy, and caregiving skills). These initiatives included one to one teaching at the bedside, and the provision of formalised group teaching sessions. One to one teaching was supported by the introduction of documentation referred to as either shared care documents or delegation of care forms, which recorded what patient specific teaching and instruction had been provided by nurses to caregivers.

A number of tissue viability nurses reportedly delivered organised group pressure ulcer training sessions for both home carers and family caregivers. These sessions were funded through a variety of sources, including charities, community education provider networks, and local authorities. Participants described mixed levels of attendance and problems with staff turnover demanding the ongoing provision of foundation level training. This appeared difficult to resource and there was limited evidence of caregiver education and training needs being systematically addressed.

At a macro level, one organisation had worked with commissioners to ensure that local authority service specifications for home care providers included content pertaining to pressure area care. It was hoped that such an addition would encourage providers to be more accountable for actions and omissions in pressure ulcer prevention and management.

LIMITATIONS

Inevitably, the context in which the study took place influenced the study methodology and some limitations are acknowledged; for example, participants were self-selecting, therefore their views may not be representative of all registered nurses working in community settings. Those who did volunteer may have been different from those that did not. However, a strength of the study was that participants were recruited from a range of organisations. Furthermore, it was felt

that data saturation was achieved. Another possible limitation was that data was collected by an experienced district nurse and an experienced tissue viability nurse. It is possible that their professional background affected how participants formed answers to their questions or edited their responses. However, at the time that participants were recruited to the study and the interviews were conducted, neither interviewer were working in a clinical capacity.

CONCLUSION

Protecting patients from pressure related harm is a paramount concern in all healthcare settings. However, the extent to which lessons in pressure ulcer prevention and management can be generalised from hospital to community settings is limited by differences in the context of care. This study was an early adopter of the Model for Examining Safety and Quality in Home Healthcare and by using this model an insight into the unique dimensions of risk in home healthcare settings as experienced and perceived by nurses working in these settings has been provided. The findings raise challenges around what can be improved and may help both to inform the development of risk management strategies for pressure ulcer prevention and learn the lessons from failure.

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Table 1: SSKIN Bundle (NHS Midlands and East, 2012)

- Surface: make sure your patients have the right support
- Skin inspection: early inspection means early detection
- Keep your patients moving
- Incontinence/moisture: your patients need to be clean and dry
- Nutrition/hydration: help patients have the right diet and plenty of fluids

Table 2: Results of the NPUAP Consensus Conference (Black et al., 2011: 24)

‘Unanimous consensus was achieved for the following statements: most pressure ulcers are avoidable; not all pressure ulcers are avoidable; there are situations that render pressure ulcer development unavoidable, including hemodynamic instability that is worsened with physical movement and inability to maintain nutrition and hydration status and the presence of an advanced directive prohibiting artificial nutrition/hydration; pressure redistribution surfaces cannot replace turning and repositioning; and if enough pressure was removed from the external body the skin cannot always survive. Consensus was not obtained on the practicality or standard of turning patients every 2 hours nor on concerns surrounding the use of medical devices vis-à-vis their potential to cause skin damage. Research is needed to examine these issues, refine preventive practices in challenging situations, and identify the limits of prevention’.

**Table 3: Model for Examining Safety and Quality in Home Healthcare
(Henriksen et al., 2009)**

External Environment	<ul style="list-style-type: none"> Shifting demographics Economic pressures Device migration New technologies Innovative design Government initiatives Health care policy Political climate
Physical Environment	<ul style="list-style-type: none"> Space and layout Room adjacencies Interior features Ramps and door widths Lighting Heating, ventilation and air conditioning Indoor and outdoor transitions Gardens
Medical Devices and New Technology	<ul style="list-style-type: none"> Understanding functionality Ease of use and adjustability Maintenance and troubleshooting Training and cognitive aids Power outages and contingency plans
Social and Community Environment	<ul style="list-style-type: none"> Home culture Contact with friends and family

	<p>Activity friendly settings</p> <p>Community centres</p> <p>Transportation</p>
<p>Nature of Home Health</p> <p>Care Tasks</p>	<p>Assisting with ambulation</p> <p>Medication management</p> <p>Monitoring vital signs</p> <p>Respiratory and infusion therapies</p> <p>Lesions, wounds and pressure ulcers</p> <p>Assisting with medical devices</p>
<p>Provider Characteristics</p>	<p>Health knowledge/literacy</p> <p>Caregiving skills</p> <p>Physical and sensory capability</p> <p>Cognitive and behavioural capacity</p> <p>Willingness and availability</p> <p>Safety and quality of care awareness</p>
<p>Patient characteristics</p>	<p>Health knowledge and literacy</p> <p>Physical and sensory capability</p> <p>Cognitive and behavioural capability</p> <p>Activities of daily living</p> <p>Use of assistive devices</p> <p>Motivation and attitude</p>