

Preventing pressure ulcers in nursing homes using a care bundle: A feasibility study

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Abstract

Pressure ulcers can be painful and negatively affect health-related quality of life and healthcare costs. Many people living in nursing homes are at risk of developing a pressure ulcer. Nursing home staff, tissue viability nurses and researchers have co-designed the first theory and evidence-informed care bundle specifically for nursing homes, which consists of three prevention practices (skin inspection, support surfaces, repositioning) and a range of behaviour change techniques to promote these practices. We conducted a mixed methods feasibility study of the use of this care bundle in one nursing home in the North of England using an uncontrolled, before-and-after study design. We collected quantitative data on pressure ulcer prevention behaviours of the nursing home staff and pressure ulcer incidence rates for 5 weeks prior to implementing the bundle. Data collection continued for a further 9 weeks during the bundle implementation phase. We explored adherence to the bundle and participants' experiences of using it. The Conceptual Framework for Implementation Fidelity and the Theoretical Domains Framework informed the semi-structured interviews. Quantitative and qualitative data were analysed using descriptive statistics and deductive framework analysis respectively. We collected data for 462 resident bed days prior to implementing the bundle; five new pressure ulcers were recorded and repositioning was the only documented pressure ulcer prevention behaviour. We collected data for 1,181 resident bed days during the intervention phase; no new pressure ulcers developed and the documented prevention behaviours included repositioning, skin inspection and checking support surfaces. Participants reported that the bundle enhanced the care they delivered and offered suggestions for future improvements. Our findings have highlighted a number of feasibility issues surrounding recruitment and retention, collecting data and implementation fidelity. A pressure ulcer prevention bundle specifically designed for nursing homes was acceptable. The feasibility work has highlighted the potential for the intervention and the areas that require development and refinement.

KEYWORDS

care bundle, feasibility and acceptability, nursing homes, pressure ulcer prevention

1 | BACKGROUND

Pressure ulcers are areas of localised damage to the skin and/or underlying tissue as a result of pressure or pressure and shear (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel, & Pan Pacific Pressure Injury Alliance, 2014). Pressure ulcers may be associated with an increased length of hospital stay and a poor prognosis overall (Smith et al., 2017). In addition to the personal consequences of pressure ulceration such as pain, low mood and social isolation (Briggs et al., 2013; Gorecki et al., 2009), there are macro-level financial implications also. For example, in the UK the annual cost of treating pressure ulcers is estimated to be £3 million (Dealey, Posnett, & Walker, 2012).

Pressure ulcers are largely preventable, thus their incidence is considered indicative of the quality of care delivered (Amir, Lohrmann, Halfens, & Schols, 2017). A point prevalence survey of complex wounds (e.g. pressure ulcers, leg ulcers) conducted in a northern UK city found pressure ulcers to be the most prevalent complex wound reported (0.31 per 1,000 people; 95% CI 0.28–0.36) (Hall et al., 2014); and 26% of individuals with a pressure ulcer lived in residential or nursing homes. Increasing age, immobility and illness are risk factors associated with developing pressure ulcers (Chiari et al., 2017; Coleman et al., 2013). Consequently many nursing home residents will be at high risk and prevention in this setting is a priority.

Several activities are recommended in pressure ulcer prevention care guidelines (National Institute for Health & Care Excellence: Pressure ulcers, 2014; National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel, & Pan Pacific Pressure Injury Alliance, 2014). It is widely acknowledged that healthcare workers' use of guidelines is frequently sub-optimal (Eccles et al., 2009; Grimshaw, Eccles, Lavis, Hill, & Squires, 2012). An overview of 12 systematic reviews found that the complexity of clinical practice guidelines and the time required to access them are frequently reported as barriers to their use in practice by healthcare professionals (Francke, Smit, de Veer, & Mistiaen, 2008). The Institute for Healthcare Improvement developed the notion of care bundles, which are a set of three to five evidence-informed clinical interventions (referred to from now on as elements) (Resar, Griffin, Haraden, & Nolan, 2016), as a potential solution to the underuse of evidence-based practices. The Institute for Healthcare Improvement recommend that every eligible recipient should receive all of the elements of care unless medically contraindicated (Resar et al., 2016).

Our recent systematic review included 37 studies evaluating the relative effects of bundles on health outcomes. We found bundles may be effective in reducing negative patient outcomes but the evidence quality was largely poor (Lavallée, Gray, Dumville, Russell, & Cullum, 2017). The SKIN bundle has been developed with the aim of preventing pressure ulcers in hospital settings (Gibbons, Shanks, Kleinhalter, & Jones, 2006) and focuses on key activities believed to reduce the risk of pressure ulcers: *Surfaces, Keep moving, Incontinence, Nutrition and hydration*.

Many bundles are developed and implemented with the implicit aim of maximising the delivery of evidence-based practices

What is already known about the topic?

- Adherence to pressure ulcer prevention practices and documentation can be sub-optimal in nursing home settings.
- Pressure ulcer prevention bundles implemented in hospital settings may reduce pressure ulcer incidence.

What this paper adds

- A pressure ulcer prevention bundle for nursing homes is acceptable and has the potential to improve care.
- Nursing home staff believed their care became more comprehensive when using the bundle and they felt accountable for the care provided due to the inclusion of staff signatures on the bundle documentation sheet.
- We identified the following issues to be addressed by future studies: recruitment and retention; collection of care and outcome data; staff adherence.

via changing the behaviour of healthcare professionals. Despite the key role of behaviour change theories in intervention development and evaluation, via provision of a framework to promote, monitor and explain change (Craig et al., 2008; Michie et al., 2005; Michie & Prestwich, 2010), explicit theory-driven approaches within most bundles have not been described (Lavallée et al., 2017). We co-developed with nursing home staff and tissue viability nurses, a theory-driven pressure ulcer prevention bundle specifically for use in nursing home settings (Lavallée, Gray, Dumville, & Cullum, under review).

We assessed the feasibility of implementing our pressure ulcer prevention care bundle in a nursing home setting. Our objectives were to examine implementation delivery and fidelity, staff views on using the intervention; and to investigate general study issues such as nursing home recruitment and retention.

2 | METHODS

2.1 | Design

We conducted a mixed methods feasibility study involving a quantitative uncontrolled before-and-after study of the bundle and the associated activities to support implementation; and qualitative semi-structured face-to-face interviews with staff using the care bundle with questions informed by the Conceptual Framework for Implementation Fidelity (Carroll et al., 2007) and the Theoretical Domains Framework (Cane, O'Connor, & Michie, 2012).

2.2 | Participating sites

We used purposive sampling to recruit the nursing home sites, where care for individuals at risk of developing pressure ulcers is

TABLE 2 Intervention content

| Implementation intervention | Content | Behaviour change techniques (Michie et al., 2013) |
|--|--|--|
| A one-off face-to-face training and education session delivered by: -a tissue viability nurse (who focused on pressure ulcer prevention); and -one of the research team with expertise in implementation science (who discussed how to implement the care bundle). | Preventing pressure ulcers: -what is a pressure ulcer; -what causes pressure ulcers; -risk factors; -skin inspection; -how to identify: -the early stages of pressure damage; -areas at most risk; -safeguarding; -pressure relieving equipment; -seating; -repositioning; -nutrition; -family and carer education. Implementing the care bundle: -how often the care bundle elements should be delivered; -any barriers to using the care bundle. | Information about social and environmental consequences (e.g. if a resident develops a pressure ulcer additional resources may be required, safeguarding concerns may be raised). Information on health consequences (e.g. if a resident develops a pressure ulcer they may experience pain and have reduced quality of life). Instructions on how to perform the behaviour (e.g. how to conduct a skin assessment). |
| Skin champions | The nursing homes already had designated skin champions. The nursing home care staff could speak with the skin champions if they had any concerns or queries about pressure ulcer prevention or the care bundle. The skin champions were also able to demonstrate the pressure ulcer prevention techniques and provide examples of good record keeping (i.e. documentation). | Demonstration of behaviour (e.g. how to conduct a skin assessment). |
| Posters and the care bundle documentation sheet | Posters were displayed in the nursing office to remind the care staff to use the care bundle. The care bundle itself also acted as a checklist (Table 1) as staffs were required to document care on the bundle sheets. | Prompts/cues |
| Monthly audit and feedback | Care bundle data collected weekly. Monthly rates of adherence to the care bundle and pressure ulcer incidence to be provided to the skin champion on a monthly basis. | Feedback on behaviour (i.e. adherence to the care bundle). Feedback on the outcome of the behaviour (i.e. pressure ulcer incidence). |

TABLE 3 Data collection procedures

| Pre-intervention phase | | Intervention phase |
|---|---|--|
| Five-week pre-intervention period | Two-week training period | Nine-week intervention period |
| Consisted of 'usual care' with the care staff continuing to complete their standard pressure ulcer prevention practices including repositioning and documentation. Data were recorded per bedroom rather than per resident. <u>Weekly data collection:</u> Repositioning the residents Pressure ulcer incidence: -the documented development of any new pressure ulcers; -severity and location of pressure ulcers. | We provided the pressure ulcer prevention training and education session (Table 2) <u>Measurements taken:</u> Feedback form: -open-ended feedback questions. | Consisted of: -delivering the care bundle elements (checking of support surfaces, skin inspection, repositioning) once a resident was identified as being at risk. Data were recorded per bedroom rather than per resident. <u>Weekly data collection:</u> Risk assessments: -documentation of monthly risk assessment scores. Adherence to the care bundle elements: -individual elements; -all-or-none adherence Pressure ulcer incidence: -the documented development of any new pressure ulcers; -severity and location of pressure ulcers. |

did not prescribe the methods for conducting the risk assessment, but asked the participants to document on the bundle sheet the risk assessment score for each resident as well as the date of the next

scheduled risk assessment. Participants were required to document that they had completed the care bundle on delivery, and one researcher collected the documentation sheets for auditing purposes.

2.4.3 | Healthcare workers' experiences of using the care bundle

Following the intervention phase, we conducted face-to-face semi-structured interviews with the care staff. The topic guide was informed by the Conceptual Framework for Implementation Fidelity (Carroll et al., 2007) and the Theoretical Domains Framework (Cane et al., 2012). The topic guide was piloted with three participants and no further changes were necessary, thus we included the pilot data in the main analysis. Interviews were approximately 50 min in length. The interviews were audio-recorded, transcribed verbatim, anonymised and proof-read. We collected the demographic information relating to participants' experience of working with people at risk of developing pressure ulcers.

2.5 | Data analysis

We managed and analysed quantitative data using IBM SPSS Statistics 22 (IBM Corp, 2013). We used descriptive statistics to summarise pre-intervention and intervention pressure ulcer prevention behaviours. We measured participants adherence to the elements (e.g. repositioning) using the self-reported documentation sheet. We calculated 'all-or-none' adherence using a denominator of *number of residents per bed day receiving the bundle per week* and numerator of *number of residents per bed day who received the complete bundle per week* (Nolan & Berwick, 2015). We calculated adherence to the individual elements using an 'item-by-item' measurement where the denominator was the *total number of residents per bed day included per week* and the numerator was the *number of residents per bed day who received the element fully per week* (Nolan & Berwick, 2015).

We managed the qualitative data in NVivo Qualitative Data Analysis Software 11 (QSR International Pty Ltd, Doncaster, VIC, Australia). We read and initially coded the transcripts using the framework method (Gale, Heath, Cameron, Rashid, & Redwood, 2013). Analysis was informed by the Conceptual Framework for Implementation Fidelity (Carroll et al., 2007) and the 14 domains from the Theoretical Domains Framework (Cane et al., 2012). The theoretical domains fitted within the 'potential moderators' component of the Conceptual Framework for Implementation Fidelity (Carroll et al., 2007). Data were analysed inductively to ensure no important themes were lost through the deductive data analysis. If data were relevant to different themes and sub-themes, we incorporated them into the most relevant code. All transcripts were analysed by two authors (JL, TG). We considered themes to be salient based on frequency, the presence of conflicting beliefs or inconsistencies across all of the participants and the perceived strength of the belief that the theme affects the behaviour (Francis et al., 2009; Patey, Islam, Francis, Bryson, & Grimshaw, 2012).

2.6 | Ethics

This study was given approval by the University of Manchester.

3 | RESULTS

3.1 | Recruitment and retention

Two nursing homes that provide a range of care services including nursing, residential and palliative care for 70–125 residents each initially agreed to participate. One nursing home, whose staff had participated in the development of the bundle, was unable to continue with the study following the pre-intervention data collection due to staff shortages and resident illness. One nursing unit within one nursing home participated in all of the study aspects ($n = 21$ nurses and healthcare assistants; $n = 29$ residents). Of the 21 members of staff who participated, 12 attended the training session (nurses ($n = 3$); healthcare assistants ($n = 8$); manager ($n = 1$)) and nine participated in the face-to-face interviews (nurses ($n = 4$); healthcare assistants ($n = 5$)), but only four of those interviewed attended the training. The median years of experience in caring for those at risk of developing a pressure ulcer was 12 years (interquartile range: 8–15 years).

3.2 | Implementation fidelity

We present the pre-intervention phase data followed by the intervention phase data and quantitative and qualitative data are presented together. There were two salient themes each with sub-themes: adherence with the care bundle and potential moderators to using the care bundle.

3.2.1 | Pre-intervention phase

Pressure ulcer incidence rates and repositioning charts were provided for a total of 462 resident bed days. Overall there was 74% adherence with the repositioning charts. Five new pressure ulcers developed (two Stage 1 [hip; back], one Stage 2 [sacrum], one Stage 3 [sacrum], one not staged [hip]). It was not clear whether some residents developed multiple pressure ulcers or whether five individuals each developed one pressure ulcer.

3.2.2 | Intervention phase

We collected data for a total of 1,181 resident bed days and no new pressure ulcers were documented.

4 | THEME 1. ADHERENCE WITH THE CARE BUNDLE

4.1 | Adherence with the clinical interventions

The reported all-or-none adherence to the bundle was 16%, although this varied throughout the 9 weeks (Figure 1). The reported adherence to the individual elements also varied: adherence was 75% (887/1,181) to the *repositioning* element; 22% (260/1,181) to the *support surfaces* element and 21% (248/1,181) to the *skin inspection* element. The reasons for non-completion were rarely documented.

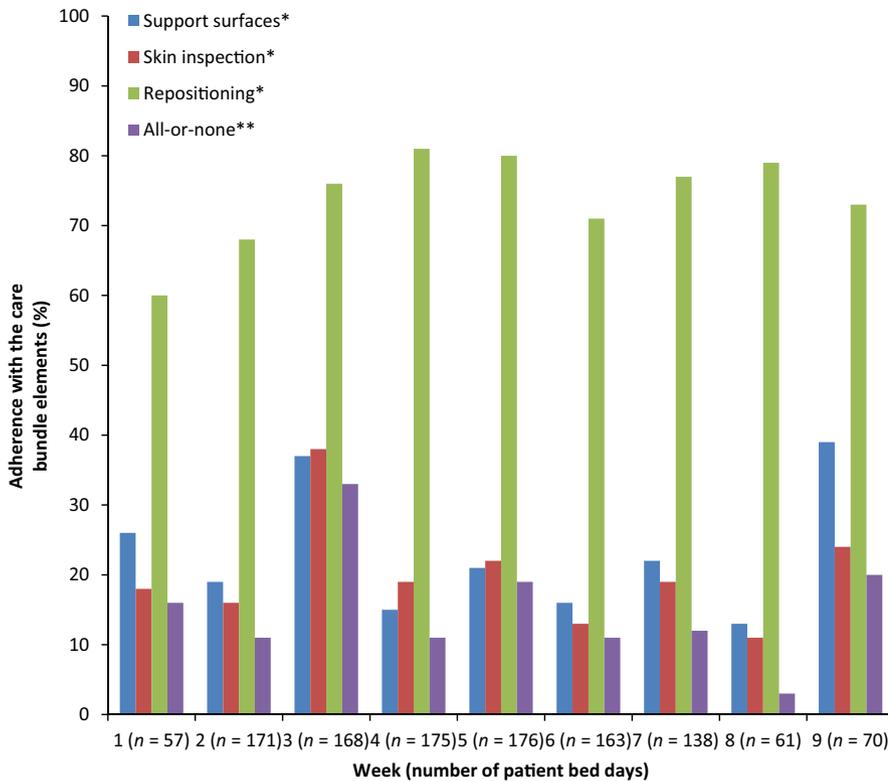


FIGURE 1 Weekly reported adherence with the care bundle elements. *Adherence with the individual element; **adherence with all of the elements

4.2 | Adherence to the implementation interventions

Twelve participants attended the training and education session, but the materials were readily accessible to all. The nursing home unit had two skin champions; one to support day staff and the other night staff. We planned to provide monthly feedback to the team, via the skin champions, on adherence to the care bundle but due to shift patterns, understaffing and difficulties collecting the data weekly this proved difficult at times. Prompts/cues were used in the form of posters in the nursing office and the bundle documentation sheet acted as a prompt in itself:

It's a prompt yeah. We know that we should check it, but sometimes you just think 'pad changed, swap sides, yeah we're done'. But with them [the bundle] you're like, 'oh actually we'll just check the skin while we're here, just a quick look' ... so yeah it probably just prompted me a bit more to check people. [Healthcare assistant, 3].

4.3 | Risk assessment and frequency of care bundle delivery

The risk assessment score was provided 65 times (6%) and a Waterlow risk assessment score of 19 (17%) was most common, indicating a high risk of developing a pressure ulcer. The date of the next risk assessment was documented once. Due to the large volume

of missing risk assessment data, we had limited information regarding whether the bundle elements were delivered with adequate frequency. Where a risk assessment score was recorded, the frequency with which the bundle was delivered was appropriate 63% of the time (41 times).

All of the participants said that including the risk assessment score and the date of the next assessment were unnecessary. The reasons for not completing the risk assessment section included a lack of time, limited understanding and copying how others had completed the bundle. They explained that the care bundle frequency and changes to the care plan were communicated during staff handover, and did not report a link between a risk assessment score and the frequency of care.

I don't think it [the risk assessment score] means anything to us as carers. I don't think, whether it was on there or not, it wouldn't affect the care that they were receiving. [Healthcare assistant, 3].

The participants were surprised and disappointed with the inconsistency of the bundle delivery as they understood the importance of the 'all-or-none' approach.

It's disappointing that some of the figures don't tally, because I would have liked them to all come out and mirrored each other [Nurse, 2]

Some of the reasons offered to explain the differences included a lack of time to complete the checks; the belief that the skin inspections

only needed to be conducted once a day and confusion about how to complete the documentation. The participants highlighted the wording of the documentation sheet as an area for improvement.

The cross is most probably a 'no' because a lot of them will put a tick for 'yes there is a change' and a cross for 'no'. So that's probably where the overlooks come because they probably have done it. I've picked up a few myself now you mention it and they have put crosses on it and I've said straight away to who I've been working with and they've actually said 'No they've no change in their skin, that's a no.' [Healthcare assistant, 1].

5 | THEME 2: POTENTIAL MODERATORS TO USING THE CARE BUNDLE

5.1 | Participant responsiveness to the care bundle

The participants who attended the training session rated it highly. The participants reported that they had learned about pressure ulcer prevention, the bundle and how to use it. The individuals who attended the training session and participated in the interviews did not believe that the training influenced how they used the bundle in practice.

I don't think there's anything in that training that could make you use them more effectively, you just live and learn. You've just got to get used to them I think. [Healthcare assistant, 3].

Initially, the participants were unfamiliar with how to use the bundle and found it to be time-consuming. However, they explained that the time required to complete the bundle decreased with increased familiarity and one participant reported having more time with the residents as a consequence of using the bundle. Despite the low adherence to the whole bundle, the participants reported that the bundle was straight forward to use. Therefore the issues with adherence may have been related to documentation, as highlighted above.

The participants often compared the bundle elements with their previous repositioning charts. The participants reported that their care became more comprehensive as they were required to address several prevention issues not just repositioning. The space to include information on the reverse side of the bundle documentation sheet was also something that their previous charts did not have. The participants discussed the benefits of having this additional space; reporting a perceived increase in the continuity of care as they found it easier to communicate the care provided and any changes to a resident's clinical status during their shift.

you're making your colleague aware that you've seen something because what [Healthcare assistant, 2] sees, I might not have seen that day. [Healthcare assistant, 1]

The documentation sheet was considered particularly important to evidence the care delivered. They thought that a more in-depth description of the care provided was something that the Care Quality Commissioning regulators and Clinical Commissioning Groups (National Health Service bodies responsible for the planning and commissioning of healthcare services for the local area) would find useful and more constructive.

You can go and find this [the bundle sheet] you can tick are they red? Yeah tick such a body is red and we know about it and we've been actively doing something about it. So I think we do need that on the back. [Healthcare assistant, 5].

Participants recommended three revisions to the bundle in addition to the documentation issues noted above. Firstly, the addition of a *continence care* element. The participants reported continence issues on a separate document, but explained that including continence care would be useful. Secondly, the participants believed that the wording for the repositioning element did not accurately describe how they used the hoist when assisting a resident with their repositioning. Thirdly, one participant reported that the wording for some of the elements was too broad and she did not always know what they meant.

I think if it was simplified, people are more likely to pay a bit more attention to what they're ticking! [Healthcare assistant, 5]

5.2 | Pressure ulcer prevention knowledge

All of the participants reported changing their practice as a result of using the bundle due to an increased awareness of the different aspects involved. The participants explained that this greater awareness resulted in their care becoming more comprehensive and they were able to recognise the early signs of skin deterioration. Whilst adherence to the support surfaces and skin inspection elements was low, there was an increase in the reporting of these elements from the pre-intervention phase.

I think it's better at highlighting a problem than our traditional turn charts that we've got because you can clearly see that, you can plot if there is starting to be a problem and then obviously it gets picked up a lot quicker I think. I think with that if there is any pressure problems it gets picked up quicker with these (bundle) than it does with our traditional charts. [Nurse, 2].

However, there were some knowledge limitations regarding specific aspects of pressure ulcer prevention, potentially impacting on how they used the bundle.

I think that the skin, the pressure areas checked, as long as we do it once a day or twice a day, that we've seen with our own eyes that they're OK [Healthcare assistant, 3]

5.3 | Behavioural regulation

Participants explained that providing their signature when they had or had not delivered the bundle influenced how they used the bundle and they reported paying greater attention to whether the residents had any pressure area redness.

I think we probably checked the pressure areas a little bit more actually. Because you've got to tick whether you've done it, you have got to physically look. ... So yeah it did make me look personally. I did check people more with them, definitely! [Healthcare assistant, 3].

5.4 | Beliefs about the consequences of pressure ulcer prevention

All of the participants explained that they were prepared to deliver all of the elements if they believed they would be of benefit to their residents. Initially, they agreed to participate in the study as they believed it would help to reduce the incidence of pressure ulcers and the participants reported a reduction in the number of pressure ulcers when implementing the bundle.

I do think the incidences of pressure problems had reduced using them (bundles). [Nurse, 2]

6 | DISCUSSION

Our findings suggest that a bundle may be an acceptable tool to use for the prevention of pressure ulcers in nursing homes but that further work is needed to increase adherence and/or improve documentation. Complete delivery of the bundle (or documentation of this) was low but this contrasts with feedback from participants who felt the bundle was easy to follow, facilitated the continuity of care and led to the provision of comprehensive pressure ulcer preventative care. It is possible that the bundle increased awareness of the number of practices involved in pressure ulcer prevention by emphasising the need to focus on additional elements.

6.1 | Acceptability of the care bundle

Our findings are in line with the Theoretical Framework for Acceptability (Sekhon, Cartwright, & Francis, 2018), which defines acceptability as a multifaceted construct reflecting the extent to which those delivering or receiving an intervention deem it as appropriate based on their anticipated and experienced acceptability. The collaborative approach we took during the development of the bundle is likely to have assisted with the levels of acceptability as we were able to identify the most appropriate procedures

to implement research into clinical practice (Buckley, Grant, & Glazener, 2013).

Based on the opinions of the participants using the bundle, some revisions are required (Table 4). Firstly, we need to ensure the content is meaningful to those using the bundle (Bowen et al., 2009). Secondly, the participants suggested including 'continence care' within the bundle. However, our current view is that continence care is a separate issue (Gray et al., 2011) and probably requires a distinct and continence-specific bundle (e.g. The Health Foundation's continence promotion care bundle, 1972). Moreover, adherence to all of the elements was low and incorporating additional elements may compromise the extent to which the bundle is implemented and completed.

Our findings suggest that the participants viewed the preceding risk assessment aspect as unnecessary. A limited application of the risk assessment tools is reported in the literature with hospital staff demonstrating a preference for clinical judgement (Kaddourah, Abu-Shaheen, & Al-Tannir, 2016; Nuru, Zewdu, Amsalu, & Mehretie, 2012). Therefore, this raises the question of whether the risk assessment should become a mandatory component of the bundle. However, further research is required to enable a better understanding of how well existing risk assessment tools can predict the risk of pressure ulcer development (Shi, Dumville, & Cullum, 2017).

6.2 | Feasibility of care bundle implementation

By exploring the feasibility of implementing the bundle in practice, we identified three key findings.

6.2.1 | Recruitment and retention

We faced challenges surrounding the recruitment and retention of the nursing home sites. We were able to recruit two nursing homes only and staff shortages and sickness led to the withdrawal of one nursing home. It was also difficult to recruit the tissue viability nurses to provide the training session and continued support to the nursing home throughout the study period.

6.2.2 | Collecting outcome data and providing feedback

We faced challenges in collecting the data weekly and presenting the data back to the participants due to shift patterns and staff sickness. Therefore, we were not able to fully adhere to our planned feedback strategy and provided feedback at the end of the intervention only. The data collection issues highlighted the need for the nursing home staff to become trained in being able to manage this in-house. The role of facilitation is referred to within the literature detailing the behaviour change of healthcare workers (Harvey & Kitson, 2016). This is a role that would be appropriate for a skin champion; ensuring they are trained appropriately will be an aspect incorporated into future evaluative work.

TABLE 4 Feasibility issues and potential solutions

| Feasibility issues identified | Potential solutions |
|---|---|
| Care bundle content | |
| Wording of the care bundle was too complicated and did not reflect care provided. | -We will work closely with specialist nurses and care staff to refine the wording to ensure it is suitable. -'Y/ N' will be used instead of 'X-/' |
| Documentation of the risk assessment score and due date was limited. | -The risk assessment component will not become mandatory. -Specific training will be delivered prior to implementing the care bundle. Training will include how to conduct a risk assessment and why risk assessments are important. |
| Recruitment and retention | |
| Recruitment and retention rates were low. | -We will attend the regional quarterly meetings with managers to present the care bundle and the project and discuss any concerns they may have about the care bundle. -We will meet with the local Care Commissioning Groups to identify suitable nursing homes to contact. -We will work with the participating nursing homes to reduce the potential burden of participating in the study and increase the likelihood of retaining the participating sites. |
| Adherence to the care bundle | |
| Low adherence to the care bundle elements and/or documenting the care delivered. | -We plan to involve the skin champions as much as possible in the training of the care staff. The skin champions will receive training from the tissue viability nurse and the skin champion will deliver the training to the care staff. -Implement the care bundle elements one at a time to facilitate the behaviour change process and not overwhelm staff and impact on their adherence to the bundle elements. The implementation of each element will be preceded by a specific training session about that element (e.g. repositioning). The second and third elements will be implemented once adherence has reached a level that has been agreed by the nursing home managers. |
| Data collection | |
| Data collection was conducted by the researcher and it was not possible to present the adherence rates to the staff on a monthly basis. | -The skin champion could collect the data and provide feedback to the care staff about their levels of adherence. |

6.2.3 | Adherence to the care bundle elements

The participants reported that they provided more comprehensive care when using the bundle and our findings suggested an increase in the reported delivery of the evidence-informed pressure ulcer prevention practices. However, according to the Institute for Healthcare Improvement's guidance (Resar et al., 2016), adherence rates were inadequate as the all-or-none adherence rates should have been at least 95%.

The participants reported that including staff signatures on the documentation sheet motivated them to complete all of the bundle elements, although this did not occur in practice when we explored the data. As their signatures were a requirement of the bundle, the participants explained that they felt accountable for their actions and were aware of the legal ramifications associated with pressure ulcers. However, this information contrasted with the poor all-or-none adherence rates. As repositioning was the only prevention practice reported during the pre-intervention phase, we believe that the process of implementing and documenting the skin inspection and support surfaces elements require more focus in future evaluations (Table 4). Crucially, we need to understand whether skin inspection and checking of support surfaces were undertaken but poorly documented or whether these are areas of pressure ulcer prevention that are sometimes neglected.

6.3 | Limitations

This study has limitations. Firstly, this was a small-scale study and we relied on self-reported behaviours and participants were aware that their pressure ulcer prevention behaviours were being monitored. Nevertheless, our qualitative data supported the quantitative data, suggesting the self-reports were truthful or even underestimated the levels of adherence to the bundle. Our findings are similar to other studies assessing the use of pressure ulcer prevention bundles in hospital settings; with increased awareness of pressure ulcer prevention practices, good communication and positive attitudes towards bundles being reported (e.g. Roberts et al., 2017; Tayyib & Coyer, 2017). We were not able to collect any demographic information about those receiving the bundle due to the requirements of our ethics approval. We had planned to collect data on how each resident received the care bundle, in line with their risk of developing a pressure ulcer; however, the ethics committee required data to be collected at bedroom rather than resident level in order to protect the privacy and anonymity of the residents, who were not being asked for consent individually. Consequently, we collected and analysed the data on a per bedroom basis which we believe is adequate for this feasibility study. Finally, the poor adherence rates may have been due to a number of implementation issues including understaffing, disagreement with the content of the bundle and

the limited tissue viability nurse input in terms of education and training.

6.4 | Future research

Further work is necessary to gain an understanding of the feasibility issues we encountered during this study including recruitment and retention, data collection and adherence to the bundle. Together, these findings support the rationale for developing a more robust evaluation of the bundle prior to a cluster-randomised trial.

7 | CONCLUSIONS

This study demonstrates how a pressure ulcer prevention bundle is acceptable to nursing home staff and has the potential to improve the provision of care. The participants reported an increase in their motivation to provide more comprehensive care due to the inclusion of their signature on the documentation sheet. They also reported the value of the bundle as an aide memoire reminding them of the expected pressure ulcer prevention procedures. We have identified some refinements to the bundle and plan to gain a deeper understanding of the feasibility issues we identified before conducting a larger evaluation. Our care bundle intervention is in line with the Royal College of Nursing and the National Institute for Health and Care Excellence recommendations for an integrated approach to pressure ulcer prevention with a clear strategy and continuous quality improvement informed by regular audit and feedback.

AUTHORS' CONTRIBUTIONS

All of the authors conceived the study and contributed to its design. JL co-ordinated the study, interviewed all of the participants and transcribed the data, analysed and interpreted the data and completed the drafting of the paper. TG independently coded the data. All of the authors contributed to the interpretation of the data, the drafting of the paper and approved the final version before submission.

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