

Barriers and facilitators to implementation of a multifaceted nurse-led intervention in acute care hospitals aimed at reducing indwelling urinary catheter use: A qualitative study

Vicki Parker PhD, RN, Professor¹  | Michelle Giles PhD, RN, Associate Professor^{1,2}  |
Jennie King PhD, RN, Senior Lecturer^{2,3}  | Kamana Bantawa MPH, Research Assistant¹ 

¹Hunter New England Local Health District, Newcastle, NSW, Australia

²University of Newcastle, Newcastle, NSW, Australia

³Central Coast Local Health District, Gosford, NSW, Australia

Correspondence

Michelle Giles, Hunter New England Local Health District, Newcastle, NSW 2300, Australia.

Email: michelle.giles@health.nsw.gov.au

Funding information

Funding for the project has been granted through the NSW Ministry of Health Translational Research Grant Scheme.

Abstract

Background: It is essential to evaluate the ways in which practice changes are implemented and received in and across contexts, identifying barriers and enablers, and mechanisms for enhancing success.

Aim: To provide insights into the experiences of clinicians in implementing a multifaceted bundled urinary catheter care intervention in four acute care hospitals in New South Wales, Australia.

Methods: The catheter care bundle was implemented using a pre- and postintervention study design. The intervention was implemented in all adult inpatient wards, emergency departments and operating theatres of four hospitals. The bundle consisted of an integrated set of evidence-based practices to assist clinicians in making better informed decisions related to catheter insertion, care and removal practices. Focus groups at each participating hospital evaluated the implementation processes from the clinicians' perspective, identifying barriers and enablers to successful implementation.

Results: Eight focus groups were held with 35 participants. Four key inter-related themes were identified: early and sustained engagement with key stakeholders; good planning but remaining flexible; managing the burden of practice change; and adopting and sustaining practice change. These themes capture and highlight the complexity and the challenges associated with implementation of the practice change across contexts and the project timeline.

Conclusion: It is imperative to understand the challenges associated with complex practice change and ways in which implementation can be optimised. This study identified barriers and enablers experienced by staff implementing the bundled intervention. The themes encapsulate factors central to success of practice change within the complex, multilayered healthcare environment.

Relevance to clinical practice: Key challenges highlight the need for forward planning, strategic engagement of key players, continuing monitoring and feedback together with adequate resourcing tailored to result in sustainable normalisation of the intervention over time. The COREQ checklist for qualitative studies has been used in reporting this study.

KEY WORDS

acute care, multifaceted approaches to change, research implementation

1 | INTRODUCTION

High rates of catheter-associated urinary tract infection (CAUTI) constitute a significant, persistent and widespread health problem, not only because of the use of urinary catheters without clinical justification, but also because of long-term complications and high associated costs. Interventions designed to overcome excessive catheter use are low cost, low risk, effective and sustainable (Meddings et al., 2014). Increasing evidence highlighting the incidence and cause of CAUTI has seen rates of CAUTI decrease over the last decade; however, unacceptable levels of catheter use and consequent CAUTI persist. A recent study by Saint et al. (2018) identified CAUTI rates of 10.5% in a cohort of 2,076 patients.

In acknowledgement of the complex and multifaceted nature of care associated with many interventions and the increasing availability of robust evidence, the use of bundled evidence-based interventions is growing (Resar, Griffin, Haraden, & Nolan, 2012). Bundles of interventions have been successful when combined with implementation strategies to change well-established practices of nurses and physicians (Meddings et al., 2014). However, although bundled interventions have been shown to reduce CAUTI, few studies have evaluated the implementation and the experiences of clinicians involved in the implementation.

In order to achieve further reductions in inappropriate use of urinary catheters and sustained improvement in indwelling urinary catheter (IDC) care, it is essential to evaluate the ways in which changes in practice are implemented and received in and across contexts, identifying barriers and enablers as well as mechanisms for enhancing success (Li, Jeffs, Barwick, & Stevens, 2018; May, Johnson, & Finch, 2016). This paper provides insights into the experiences of clinicians in implementing an evidence-based NO CAUTI bundle in four hospitals in NSW, Australia.

2 | BACKGROUND

Urinary tract infection due to IDC use is possibly the most common and the most preventable hospital-acquired infection (HAI; Saint, Meddings, Calfee, Kowalski, & Krein, 2009). Up to 16% of patients in hospital receive an IDC, many of which have been identified as unnecessary or inappropriate (Gokula, Hickner, & Smith, 2004), with risk of CAUTI increasing with length of time an IDC is in situ (Gould, Umscheid, Agarwal, Kuntz, & Pegues, 2010). CAUTI results in substantial care burden and significant hospitalisation costs, patient distress, embarrassment, discomfort, pain and activity restrictions (Gould et al., 2010; Saint et al., 2009).

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

- A better understanding of the complexities of hospital-wide practice change in acute care environments.
- Highlights barriers to successful implementation of sustainable practice change.
- Identifies key elements that can enhance implementation success

Increasing awareness and sustained focus over the last decade has seen mixed results (Advani & Fakh, 2019). Overall, catheter use and CAUTI rates have reduced significantly but the rate of improvement has plateaued, with unacceptable rates persisting (Giles et al., 2015; Meddings et al., 2014). Many factors impact on both the capacity and propensity for change in diverse hospital environments. Adding to the complexity associated with practice change is the way in which practices become entrenched and how often workplace cultures operate to resist change (May et al., 2016).

A care bundle comprises three to five relatively independent, evidence-based elements designed for a particular population and care context. Implementation of a bundle involves the alignment of a collection of tasks and usually requires the involvement and cooperation of a multidisciplinary team, which if achieved successfully adds to the spread and sustainability of the practice change (Greenhalgh, 2018).

CAUTI reduction bundles have combined education, clinical skill development for placement and removal, catheter restriction and removal protocols and the use of specific equipment such as insertion packs and bladder scanners (Fakh et al., 2012; Giles et al., 2019; Giles et al., 2015; Krein, Kowalski, Harrod, Forman, & Saint, 2013; Meddings et al., 2014). Whilst evidence for the effectiveness of bundled interventions is shown through reported reductions in catheter use and CAUTI rates, the way in which implementation strategies are adopted and accepted across sites is not well reported. Although a comprehensive literature search identified several qualitative studies that evaluated bundled interventions in other clinical areas, only one study was found that reported the findings of a qualitative evaluation of a bundled catheter care intervention (Krein et al., 2013).

Krein et al. (2013) conducted a qualitative assessment of their “bladder bundle” designed to reduce catheter use in the United States. They conducted interviews with 18 participants across 12 hospitals as part of a mixed-methods study. Key barriers to implementation of the bundle included difficulty with nurse and physician engagement; patient and family requests for indwelling catheters; and routine

TABLE 1 “NO CAUTI” Implementation strategies summary based on TIDieR

Implementation strategy	Rationale	Mode of delivery	Delivered by	Delivered to and where	When/how often
Education					
Train-the-trainer workshops	To prepare educators to present the “NO CAUTI” bundle to ward-based staff, and to train educators to complete urinary catheterisation competency assessments	Face-to-face (group)	Clinical nurse consultant—urology	Nurse educators from across hospital	1 × 2- to 3-hr workshop at each facility at the start of intervention
Ward in-services	To familiarise staff with “NO CAUTI” bundle and nurse-initiated removal flowchart To identify champions in each ward	Face-to-face (group)	Nurse educators	Nurses and medical officers from all adult inpatient wards, operating theatres (OTs) and emergency departments (ED)	Minimum 1 × 20-min in-service in each ward at the start of intervention
Monitoring and feedback					
Compliance audits and feedback	To monitor compliance with “NO CAUTI” bundle and provide strategies to support implementation	Individual patient audit and feedback face-to-face (group) to clinicians	Champions (clinicians previously identified in in-services)	All inpatient wards	Weekly for first two months and then monthly for remaining 4 months of intervention period
Feedback of point prevalence of IDC usage and CAUTI	To focus clinicians on targets and progress	Face-to-face (group) and email	Research project staff	All clinicians at a ward, facility and district level	Baseline, 4 months and 9 months
Resources					
“NO CAUTI” bundle posters	Prompt awareness and better documentation	Documents displayed in wards	N/A (passive component)	Nurses and medical officers	Ongoing
“NO CAUTI” bundle badges	Prompt awareness of intervention and identify ward champions	Worn by clinicians and champions	N/A (passive component)	Nurses and medical officers	Ongoing
Catheter insertion DVDs	Educate nurses about correct catheterisation processes	Available on intranet	N/A (passive component)	Nurses	Ongoing
Facilitation					
Competency assessments	Increase proportion of clinicians that are competent in urinary catheterisation	Face-to-face (individual)	Nurse educators	Nurses	Ongoing
Champions	Act as a resource for clinicians and promote the NO CAUTI bundle to clinicians; support implementation	Face-to-face (individual and group)	Nurses	Nurses and medical officers	Ongoing

urinary catheter insertion practices in the emergency department (ED). Although not focussed on CAUTI, Lennox et al. (2014) identified challenges experienced by facilitators implementing a chronic obstructive pulmonary disease care bundle in the United Kingdom. Their focus group findings found five significant challenges, namely staff being too busy, staff changes, lack of staff engagement, added workload and patient coding issues. Similarly, a study focussing on a falls prevention bundle in hospitals in Canada found that staff beliefs, staff education, resources, leadership, ownership and staff engagement were all factors critical to success of implementation of the intervention (Aytton et al., 2017). Based on two case studies (COPD and diabetic foot complications), Green, Bell, and Mays (2017) examined in detail the implementation of the two bundles in the acute medical setting. They highlighted resource availability, perceptions of sustainability, senior leadership support and practitioner incentives as vital to successful implementation of the bundles.

There have been no previous studies reported in Australia that examine the barriers and enablers to implementation of a large-scale CAUTI prevention bundle. Between 2017–2018, a catheter care bundle (termed the NO CAUTI bundle) was implemented in four hospitals within two local health districts in New South Wales (NSW), Australia. The study aimed to reduce catheter use and duration of catheterisation. The study resulted in an overall decrease in IDC usage from 12%–10% (Giles et al., 2019). This paper presents findings from focus groups aimed at gathering information about clinicians' experiences of being involved in the project and to identify the barriers and enablers to the implementation and sustainability of the change in practice.

3 | METHODS

3.1 | Design

The NO CAUTI bundle was implemented using a pre-/postphased intervention study design in the four hospitals. The study involved all adult inpatient wards, emergency departments and operating theatres. The key component of the intervention is the evidence-based "NO CAUTI" bundle (Giles et al., 2019). Focus groups were conducted to evaluate the impact of implementation of the intervention for clinicians.

The NO CAUTI bundle consisted of an integrated set of evidence-based practices to assist clinicians in making better informed decisions related to IDC insertion, care and removal practices. The bundle included the following resources developed as part of the intervention:

- IDC insertion criteria guidelines
- Indications for IDC specimen collection
- Nurse-led IDC removal guidelines
- Educational resources and compliance auditing tools

The distribution and standardised use of a cost-effective, generic IDC insertion pack formed part of the intervention. The insertion

pack included all equipment required for catheterisation, documentation stickers and securing devices.

Routine assessment of clinician competency in urinary catheter insertion was introduced as part of the multifaceted intervention.

3.2 | Implementation strategies

Implementation strategies used in the project included education, monitoring and feedback, resources and facilitation. Implementation strategies are displayed in Table 1 in accordance with the Template for Intervention Description and Replication (TIDieR) framework (Hoffmann et al., 2014).

Key implementation strategies were rolled out in all sites. However, it was necessary to allow a degree of flexibility between the two health districts and participating hospitals. This was essential given the variation in policy, reporting systems and staffing, and the need to accommodate site-specific events and issues.

The implementation was largely nurse-led with nursing staff engagement viewed as critical to the success of the implementation. Opinion leaders were engaged as members of the design and implementation team. Nurse champions were engaged in each ward in order to promote and facilitate practice change. Champions are individuals who dedicate themselves to driving implementation, overcoming any local resistance to the intervention and keeping implementation on track (Damschroder et al., 2009). Along with self-nominated champions who generally work across shifts, nurse educators and expert clinicians with specialist knowledge were engaged to support education sessions and to undertake competency assessment.

The project was supported by NSW State Government grant funding and was overseen by an interdisciplinary steering committee.

3.3 | Focus groups

All nurses and midwives and resident medical officers in the participating inpatient wards were purposively invited via work email to participate in one of two focus groups held at each site. Information sheets were provided outlining the study, introducing the researchers and purpose of the focus groups.

A total of 8 focus groups ranging from 30–60 min were held with 35 participants, 2 focus groups at each participating hospital, in a location in the hospital away from the inpatient wards. Participants included a clinical nurse consultant (CNC; $n = 1$), clinical nurse educators (CNE; $n = 16$), enrolled nurses (EN; $n = 3$), registered nurses (RN; $n = 11$), junior medical officer (JMO; $n = 1$), nursing unit manager (NUM; $n = 1$), clinical midwife educator (CME; $n = 1$) and a registered midwife ($n = 1$).

Focus groups were conducted postimplementation by one member of the research team (author MG) who is an experienced mixed-methods and qualitative health services researcher. Consent was obtained from participants to digitally record focus groups. The

focus groups gathered information about clinicians' experiences of being involved in the project and identified the barriers and enablers to the implementation and sustainability of the change in practice. Focus group questions sought information about what worked well, what did not work well and ways in which implementation could have been improved. Pre-/postimplementation, point prevalence data were shared with participants to inform discussion and prompts were used to generate discussion if required. Focus group data were transcribed and analysed using a qualitative descriptive approach. Transcripts were not returned to participants for comment for practical reasons. Descriptive reporting provides straightforward answers to practical questions and informs understanding of real-world experiences (Bazeley, 2013; Thorne, 2008). Focus groups interviews were coded and then themed through low-level interpretation to identify key themes derived directly from the transcripts (Bazeley, 2013). Coding was conducted independently by two researchers and then cross-checked within the research team. Emergent themes were shared and verified as a check on credibility.

Ethics clearance was sought and granted through the Local Human Research Ethics Committee. All potential participants were provided with information sheets and the opportunity to attend information sessions. Participation was voluntary, and written consent was obtained.

The Consolidated Criteria for Reporting Qualitative Studies (COREQ; Tong, Samsbury, & Craig, 2007) has been used in reporting this study (File S1).

4 | RESULTS

Stakeholder focus group analysis identified four key inter-related themes: early and sustained engagement with key stakeholders; good planning but remaining flexible; managing the burden of practice change; and adopting and sustaining practice change. Together, the themes capture participants' shared critical conversations, highlighting the complexity and the challenges associated with implementation of the NO CAUTI practice change across contexts and the project timeline. The themes encapsulate factors central to success of the project.

4.1 | Early and sustained engagement of stakeholders

Engagement of key stakeholders was seen as critical to successful implementation of the intervention. Participants identified the need for engagement across the whole implementation timeline, beginning early with consultation and information sharing and continuing with ongoing information and opportunity for communication and confirmation of processes when necessary.

Key stakeholders were identified as those that could provide sponsorship and authority for the rollout of the intervention at each site, and those who would play a role in the rollout. This

included managers, educators, champions and clinicians (nurses and doctors).

Manager engagement was seen as critical by focus group participants for a variety of reasons. Managers at a service and ward level needed to be aware of what was involved in implementation so that the project could run according to plan and challenges could be identified and overcome. Managers were seen as those who could provide leadership through sponsorship to prioritise implementation commitments, and they had the authority to make the rollout happen and make the workload required a legitimate part of workloads.

If you want us to do this, [it is important to know] how much management support are you going to contribute, and how much resources were management going to contribute to the project.

(FG 2)

I think management need to recognise how important it [the practice change] is, and let it be driven then by the NUMs

(FG 2)

Information was provided to managers early in the project rollout; however, the project and its progress were not always perceived as a priority for busy managers. Hence, the project "fell off the radar" over time at some sites. It was felt that in order to keep it on the radar, there needed to be constant direct communication with NUMs.

In some sites, there were difficulties associated with getting everyone "on the same page." Managers needed to be aware of what is involved so that they could provide the leadership necessary to ensure the project would run according to plan, but it was the people on the ground who needed to be organised and supported to deliver the implementation.

Hats off to my NUM who brought it to my attention. She said 'we really need to assist with this roll out'. Supporting me being able to do the education then was huge.

(FG 4)

Along with managers, comprehensive engagement with the project implementation team at each site was seen as critical to the success of rollout because implementation at each site varied according to available staff and what was happening on site at the time. It was intended that champions would provide wider support; however, despite their willingness to engage, their engagement and participation were inconsistent and unreliable, often through no fault on their own. There was a lot of discussion about the role of champions amongst focus group participants. There was consensus that champions could play a larger role, that more champions were required and that their engagement and role in

the project needed to be reviewed with a view to overcoming some of the current challenges.

In spite of a clear view that champions were important and needed to be used more effectively, those who volunteered to be champions were frustrated by their inability to participate fully. They struggled to get to meetings and education sessions.

It's very difficult to get to when you're working on the ward or you're in charge of the ward or you have a patient load or whatever it is. Or it falls on your day off. So, I think I got to one meeting but the rest of the time I just wasn't able to get there.

(FG 4)

It was felt that more champions would have provided greater opportunity for saturation of information and education and hence capacity for change. Participants highlighted that it is not adequate to rely on educators who are not always around when catheters are being inserted, someone who is available out of hours needs to be engaged and accountable.

Another identified barrier to success of the practice change was difficulty to engage medical staff, who in some areas (e.g. operating theatres) are more likely than nurses to be making decisions about the need for a catheter and to perform catheterisation. Having medical input on the research team meant that the project, its aims and change process were communicated through appropriate channels. However, despite this and education sessions being provided to junior doctors, very few doctors on site were perceived to be engaged with the practice change process.

One participant suggested providing shared education opportunities where nurses and doctors could discuss elements of the intervention bundle, gain consensus about the value of the proposed change and commit to it.

They haven't actually been engaged with ours, but I think that's probably something that could be looked at. Instead of nursing doing these sessions separately to doctors, if we were actually in the same room, because then we're working together, we're talking together, and then we don't have to actually go up to them and say, 'do we really need this catheter?', and some people feeling uncomfortable about that. So, I think having an inter-professional approach to rolling out the projects would be really beneficial.

(FG 2)

Some participants who were engaged as part of the implementation team found their role provided a new experience. They reported having little experience and exposure to implementation research projects and hence were not fully aware of the amount of time required to conduct the implementation strategies and collect data, such as undertaking audits.

It was clear that experiences around engagement varied across sites with tensions evident between those who wanted autonomy and those who wanted a high level of direction and support, highlighting the need for assessment of context and open discussion prior to launching the intervention.

4.2 | Good planning but remaining flexible

Although there were varying experiences and perceptions about the rollout of the intervention and the associated administrative and support processes, a number of factors were identified that were critical to the successful uptake of the practice change. Along with early and sustained stakeholder engagement, having enough champions and having them engaged early, good planning and priority setting and being practical and flexible were seen as essential.

There were varying levels of readiness and awareness of the project and its timelines across sites. Some participants were aware but were still not prepared for the intensive activity required to roll it out.

When it hit, it was like all of a sudden,...//..we weren't even in the frame of mind.

(FG1)

The people that are driving the show or the project need to engage with the people that deliver the information, and they need to make it a timeframe and at a time that's conducive to workloads.

(FG 1)

Participants reported being frustrated due to unanticipated instances of resource unavailability, for example, core items being missing in the catheter pack or the pack itself not being in stock. In addition, occasional lack of equipment such as bladder scanners compromised the ability to conduct procedures as per the new guideline.

Many of the issues participants identified were recognised as being inherent problems associated with the rollout of most new interventions in complex clinical environments. Nonetheless, understanding the issues and how to mitigate them is essential in order to improve implementation processes and outcomes.

It was clear from feedback that at some sites, engagement and ongoing communication processes worked well, for example having information readily available at a central location.

Having everything there on our [communication] board, so if I wasn't there or one of the other people that was helping wasn't there, then they could get all of the information just from the board.

(FG 4)

In others sites, effective engagement and communication were hampered by perennial problems of inconsistent communication, cancellation of meetings, lack of accountability for sharing information and by staffing changes, shift work and increased periods of activity. Getting the right people together at the right time was logistically challenging. In one focus group (FG7), two participants agreed as follows;

P1: And I think a lot of the problems of getting staff off the wards [are that] we were heading into winter.

P2: Oh, there's never a good time.

P1: And there's no release for staff.

One suggested solution to the problems identified was to localise the change process with on-site accountability and reinforcing the change by revisiting the guidelines and reviewing practice on a regular basis. CNCs, along with champions, were considered central to achieving sustainability through supporting staff and maintaining standards. Another solution implemented at a number of sites was the use of the "Education Trolley," equipped with NO CAUTI educational resources, readily available to use opportunistically.

The platform of the red trolley can be used in any way, it can be used for a ten-minute session, but we could use it as a platform to go from ward to ward, practising the new style of catheterisation, and talking about it with one or two staff. It can be one on one, or it could be a group

(FG 7)

4.3 | Managing the burden associated with practice change

This theme highlights the way in which implementation of the practice change was perceived by participants as extra work, above and beyond what is normally expected, and at times, what is considered reasonable. The theme relates to the complexity of the intervention and the need to engage staff in the real-world context of care delivery in order to test and embed practice change. Who was deployed, and how they were deployed, varied considerably across LHDs, with some facilities having well-established practice change processes, and other sites being less prepared. A key difference was the reliance primarily on nurse educators compared to spreading workload across a variety of senior clinicians such as CNCs, CNSs, managers and nurse educators.

Where the work was distributed disproportionately to a select number of nurse educators, who felt they already had *too much on their plate*, they described having to cope with multiple projects, and a busy and unpredictable work environment characterised by staff shortages and competing work demands. This was particularly

evident at the hospitals where the rollout flowed into the winter months, a period of increased demand and patient acuity.

The extra work involved running multiple education sessions, undertaking competency assessments, attending project meetings, collecting audit data, documentation and troubleshooting problems with catheter packs and noncompliance with guidelines. In the early stages of implementation, extra staff were employed to help out with undertaking the audits which made a big difference in sharing the workload.

I think it was a huge impact, because we had CVAD [Central Venous Access Devise guideline rollout] at the same time. We had a really busy winter. Everyone was...you know [busy], there was so much flu around, some of the education team were actually pulled off to work clinically during that time. ...but I think if we didn't have that person doing those [audits]...I don't know if the audits would have been done.

(FG 2)

As the project progressed, however, support from managers and provision of extra staff funded through the project decreased. This meant that for some, this extra burden was experienced as overwhelming.

Audits needed to be completed along the way, and it was great in the beginning we had auditors helping us for the first two audits, and then after that, trying to get the auditors released by the management was near impossible.

(FG1)

The situation was compounded by a number of educators being part-time and also by loss of staff in critical roles and with specific expertise, for example the Continence CNC, and by recruitment of large numbers of new staff, particularly new graduate nurses.

Participants felt that some of the extra work was invisible and unacknowledged, such as the work associated with rostering people to go to education sessions and on shifts so that they can have competency signed off, and recording who has undertaken training and completed competencies and meeting with NUMs. Having strategic conversations, taking ownership and responsibility requires commitment and time.

But we're the ones who can push to have the rosters [adjusted], ... In my job, if I want staff to go to education I have to actually go and speak to the NUM and say, "this is coming up, this is what they need to do, you need to roster them to it.

(FG 7)

At one site, participants reported that the implementation process *hit a wall* because of lack of time to undertake the competency sign

off for staff. Heavy workloads associated with extra patients and increased levels of activity meant that educators and champions were unable to meet the expected targets.

Despite the challenges of the extra work involved in implementing the NO CAUTI practice change, there was a strong view that it brought benefits in terms of opportunity for nurses to participate in professional activities that would improve their knowledge and skills and also their standing in their unit, perhaps leading to further opportunities in the future.

Having access to the research team as well, for me, and asking them questions and seeing how things function ...with projects. It wasn't to do directly with your education, but it was good to see the functionality of being able to set up a research project. I took that on board. I'm trying to copy it now.

(FG 2)

Participants identified that finding time has always been challenging and was not specific to any one project or practice change. Managing the challenge is part of what needs to happen to bring about effective practice change, and participants felt that with time, it would get easier.

FG7, P2: It's the old challenge, we have to be clever.

FG7, P3 responded to P2: I think with time it will just become second nature.

Participants looked for ways to decrease the burden and increase efficiency, for example by making the most of windows of low acuity when staff have a few minutes to spare.

At the moment in my ward we've got eight empty beds, so its acuity is down, so now is a good time to do things like that [provide education]. If I try and do it in winter, and we're flat out, you know if the wards are full...

(FG 7)

There was also the view expressed that the goal of assessing catheterisation competency of all staff was impossible and that a more reasonable approach would be to assess only a proportion of staff.

Whilst all sites recognised the value of the intervention for patients and staff, and were keen to see practice improvements, some participants felt that the work involved was too cumbersome. Others reported they felt that the opportunities outweighed the burden, suggesting that the project had provided opportunities for them to step up, learn about implementation processes, gain valuable experience and to be seen as keen and professionally committed.

4.4 | Adopting and sustaining practice change

This theme portrays the varied ways in which clinicians across sites have responded to and engaged with the implementation process and change in practice, ranging from unquestioned adoption, critical review and engagement, stewardship and advocacy, through to passive and active resistance. It highlights the importance of implementation strategies that undo old ways of doing as well as those that promote new ways, and underscores the need to engage widely. The propensity for change was impacted significantly by context and the scope and nature of engagement, particularly with managers and doctors. Participants' perceptions of the success of the practice change varied across sites. The overall response was positive, exemplified in the following conversation between P1 and P2 in FG7.

P1: I see a big difference in the way they're managing catheters.

P2: For us I think the most useful part is probably the awareness of removal [of catheters].

Pretty much most things are in that [catheterisation] pack that I'm going to need. So, I can walk in and grab that rather than having to think about have I got this, that, and the next thing. So, really, I can grab that pack to check what size catheter that they require and have that and it's good to go. So, actually, really, for me, it cuts back on time.

(FG 6)

There was a strong view by many of the focus group participants that resistance to change is an expected and usual response.

Probably just old habits, breaking that. Change, is probably the biggest issue.

(FG 7)

There was also debate about the value of the intervention and concern about adopting the change in all instances. The consensus was that catheters are now far less likely to be inserted unnecessarily and to be removed sooner. This change has occurred over time with education and greater awareness of the risks associated with indwelling urinary catheterisation. The NO CAUTI project helped to consolidate the change and reinforce the reasons why the change was necessary. In this way, the NO CAUTI project injected momentum, consolidated previous efforts and the evidence for change.

However, in spite of this positive response, there were also reports of continued adherence to previous practices. In many instances, it was doctors who resisted the change in protocol, for example, by using chlorhexidine instead of saline to cleanse the meatus prior to catheterisation. This was most likely to occur where doctors

were predominately responsible for catheter insertion, such as in operating theatres.

I think we've really struggled to actually comply with the NO CAUTI [protocol]...//...we have lots of surgeons and doctors who are opposed to the saline. So they're just using chlorhexidine regardless... In the theatres, there's pretty much no nurses who catheterise; it's all done by the interns and registrars prior to procedures. So we've got to stand back and go, "do you know that this is what we're supposed to do", and we try to push it. But at the end of the day, they make their choice regardless. So it's been an uphill battle to comply.

(FG 8)

Perhaps not to the same extent, but other areas had similar problems with compliance. Many of the focus group participants reported how they spoke up against what they saw as poor practice and nonadherence to the new guidelines. They expressed that the guidelines and the NO CAUTI project itself with its education material and posters provided clear evidence and a rationale for them to speak up with authority and challenge inappropriate catheterisation practice.

The nurses and the midwives are empowered to go to the doctors and say, well look, it doesn't really fit with these criteria now. How about getting it out? It's basically providing that tool to support them.

(FG 5)

Participants described how the implementation tools also provided support for clinical decision-making, for example

And they think about infections and [think] "should we take them [catheters] out?", or, "Do they need changing?" So, I think they're actually thinking outside the box.

(FG 7)

However, not all agreed with the changes, some felt that aspects of the practice change were contentious and possibly problematic, and whilst the clinical guidelines need to be prescriptive, there are always circumstances where guidelines need to be modified. The purpose of the guideline is to guide practice rather than determine it.

Don't get me wrong, I think it's great, and it makes you think. But I think, from what I'm seeing, they're getting too regimented with it [implementing the guideline]. Unless they've ticked those boxes on that poster, they're not actually making a clinical decision themselves, based on that particular patient. So

they're refusing to put them in, which is the trouble that we've found.

(FG 1)

Information and education resources were seen to play an important role in making and sustaining the change, highlighting the importance of a multifaceted implementation strategy. Overall, the participants were happy with the education and promotional materials such as the poster, badges and information sheets and were able to use them to good effect.

FG7 P1: I like the whole bundle. The posters were brilliant.

FG7 P2 responded: We've used those, they're everywhere. The big flow chart with when to put it [the catheter] in, when to take it out, is great...//. I think that overall there's been an improvement in clinical response to looking at taking catheters out.

(FG 7)

There was also general consensus that the project has led to significant change in practice; however, there was also concern regarding sustainability of the change and the need to shift responsibility to unit staff.

I think there still needs to be that ongoing commitment, that this is really important, and we've got to keep on going with it, and reminding everyone that this is important, because sometimes people can drop off...//..We need to make sure that's it's really embedded into everyone's practice and everyone's thinking about it.

(FG 2)

5 | DISCUSSION

This study explored clinician's experiences of being involved in a hospital-wide practice change project and identified barriers and enablers to the implementation and sustainability of this change. Focus group findings highlight the need for better engagement of key staff (managers, medical staff and champions), the need for ongoing education and support, and the need to consider how workload associated with the implementation is managed and reduced as the practice change is sustained and embedded as normal practice. Resistance to change and concerns regarding sustainability underscore the need for effective socio-adaptive processes that generate collective action and result in new norms, characterised by effective ways of relating and working together (May et al., 2016).

Participants emphasised the need for engagement that occurs early, is sustained and specifically involves clinicians engaged in

IDC decision-making and care. Achieving consistent and widespread engagement was difficult for a number of reasons. Some staff reported struggling to maintain motivation when their requests for roster changes that would allow them to participate in education sessions were not granted and when managers were unaware of implementation activities and timelines. In line with recommendations from others studies, consideration needs to be given to incentives to motivate staff and gain managerial buy-in (Lennox et al., 2014). Leadership has consistently been reported as central to implementation effectiveness (Li et al., 2018). In particular, leadership across organisational levels is required to build enthusiasm for change, steward and monitor implementation and to enable the shift in accountability and ownership required for normalisation of the practice change. In this study, a key leadership role was played by CNCs and educators, particularly in terms of networking and knowledge brokering.

Most participants felt that implementation of the bundle created extra work and that more support in the way of extra staff needed to be provided through additional funding. However, there was also an equally strong view that the change in practice needs to be owned, context-specific and be normalised and sustained within existing staffing resources. Whilst the project funding was used to support some external involvement, the change needs to be sustained within existing resources. In particular, the role of champions and the means by which to support their ongoing participation in providing support for the intervention need to be considered. Participants felt the burden could be reduced by the engagement of more champions as members of the implementation team, whereby the workload for each would be reduced and the opportunity for penetration and participation across departments and shifts could be achieved. This view is supported by Damschroder et al. (2009) who suggest that influence for change can be achieved more effectively through role modelling by peers.

Urinary catheterisation is a procedure that is conducted by different personnel in different contexts. Medical staff often catheterise in acute care contexts such as operating theatres (OT) and emergency departments (ED); however, there may be differences in their level of experience and education. Although there was good engagement of nursing staff, engaging medical staff in education sessions and gaining their support for practice change were challenging. Consequently, there were some pockets of adherence to non-evidence-based practices. Feh (2015) found from a survey of medical staff in the United States that many doctors believed that for them, the risk of CAUTI from IDC was a low priority in comparison with other more pressing concerns. Together with time pressures, these reasons were cited for their failure to engage in the education and to take the time to review guidelines and revise their practice. These findings highlight the need to devise effective ways to ensure for inter-professional engagement, participation and education.

Catheterisation is not a new procedure but one that has been conducted in everyday practice for decades. As such, there is much

common knowledge, practice and experience that need to be reviewed and revised in order to change practice in accordance with best available evidence. It involves undoing entrenched practices. In this study, tools such as posters and readily available fact sheets were useful in supporting practice change. These resources provided staff with clear guidelines and tangible authority to challenge noncompliance. However, there was also tension associated with their adoption as prescriptive and inflexible and reluctance to modify them as necessary. Lack of willingness or capacity to engage in critical clinical decision-making was a further challenge highlighted by some participants. There appears to be a clear tension between the goal to reduce variation through standardisation and application of best available evidence, and the need for flexibility where individual patient circumstances require it. Critical thinking in clinical decision-making needs to be a key feature of both education programs and resources used during the implementation process. The view that practice guidelines are enduring and incontrovertible needs to be contested.

Risk of CAUTI is an ongoing patient quality and safety concern. Evidence-based prevention strategies such as the NO CAUTI bundle are imperative for reducing CAUTI risk. The complex nature of practice change and the ways various health entities are engaged with practice change make it difficult for clinicians to see clearly what direction they should take. This underscores the importance of widespread and early engagement that sees key players on the same page working according to the same agenda.

5.1 | Limitations

The study findings need to be viewed in relation to their particular context and in relation to the phase of implementation. There is a need to evaluate longer term sustained adoption of the NO CAUTI bundle. The focus group findings are limited to the experiences of mainly nursing staff in implementing the bundle as only one junior medical officer participated in the focus groups. Without further discussion with medical officers, it is not possible to understand the factors associated with reported noncompliance with the bundle.

5.2 | Recommendations

Key recommendations for further implementation and spread include: good forward planning, but with a degree of flexibility; engaging more closely with clinicians on the ground and with other disciplines, particularly medical staff; and to work beyond implementation of the bundle to help ensure the cost and accountability are taken up and absorbed by wards and departments without creating tension and risks for sustainability. In order to avoid confusion and to evaluate particular interventions effectively, organisations should avoid implementing more than one intervention simultaneously, wherever possible.

6 | CONCLUSION

The experiences described by study participants reflect many of the concerns and issues described elsewhere in relation to implementation of complex interventions. What has not been highlighted elsewhere is the difficulty associated with the simultaneous implementation of multiple projects. These challenges are particularly relevant to projects directed towards improved patient safety, such as CAUTI reduction, where organisations and national bodies have ongoing improvement plans and associated activities.

With increasing adoption of bundled interventions, it is imperative to understand the challenges associated with implementation and ways in which implementation can be optimised. This study has identified barriers and enablers experienced by staff implementing the NO CAUTI bundled intervention. Key challenges highlight the need for forward planning and leadership, strategic engagement of key players, continuing monitoring and feedback together with adequate resourcing tailored to embed the practice change as normal practice.

7 | RELEVANCE TO CLINICAL PRACTICE

Key challenges highlight the need for forward planning, strategic engagement of key players, continuing monitoring and feedback together with adequate resourcing tailored to result in sustainable normalisation of the intervention over time.

Implementing interventions that bring about system change in healthcare settings is complex and challenging. The findings of this study highlight the need for implementation strategies to be multifaceted, spanning the many disciplines, services and the multiple organisational layers that exist in healthcare environments. Although many challenges are unforeseeable, the need for forward planning with a flexible approach and strategic engagement of key players cannot be underestimated. Visible strong leadership from facility executive and management, together with the establishment of strong networking relationships with clinicians on the ground and across disciplines, are essential in overcoming obstacles that may hinder successful practice change.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the hospital champions, nurses, midwives and other key stakeholders from participating hospitals who assisted with education and data collection and participated in implementation and focus groups.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

ORCID

Vicki Parker  <https://orcid.org/0000-0002-0834-9528>

Michelle Giles  <https://orcid.org/0000-0002-8611-7941>

Jennie King  <https://orcid.org/0000-0001-7894-7606>

Kamana Bantawa  <https://orcid.org/0000-0001-8159-9921>

REFERENCES

- Advani, S. D., & Fakhri, M. G. (2019). The evolution of catheter-associated urinary tract infection (CAUTI): Is it time for more inclusive metrics? *Infection Control & Hospital Epidemiology*, 40(6), 681–685. <https://doi.org/10.1017/ice.2019.43>
- Ayton, D. R., Barker, A. L., Morello, R. T., Brand, C. A., Talevski, J., Landgren, F. S., ... Botti, M. (2017). Barriers and enablers to the implementation of the 6-PACK falls prevention program: A pre-implementation study in hospitals participating in a cluster randomised controlled trial. *PLoS One*, 12(2), e0171932. <https://doi.org/10.1371/journal.pone.0171932>
- Bazeley, P. (2013). *Qualitative data analysis: Practical strategies*. London, UK: Research Support Pty Ltd.
- Damschroder, L. J., Banaszak-Holl, J., Kowalski, C. P., Forman, J., Saint, S., & Krein, S. L. (2009). The role of the "champion" in infection prevention: Results from a multisite qualitative study. *Quality and Safety in Health Care*, 18(6), 434–440. <https://doi.org/10.1136/qshc.2009.034199>
- Fakhri, M., Greene, M., Kennedy, E., Meddings, J., Krein, S., Olmsted, R., & Saint, S. (2012). Introducing a population-based outcome measure to evaluate the effect of interventions to reduce catheter-associated urinary tract infection. *American Journal of Infection Control*, 40(4), 359–364. <https://doi.org/10.1016/j.ajic.2011.05.012>
- Feh, M. K. (2015). *Physicians' Perceptions and Practice Regarding the Prevention of Catheter-Associated Urinary Tract Infections in the ICU*. Doctoral Dissertation, Walden University, Georgia, USA. Retrieved from <https://scholarworks.waldenu.edu/dissertations/1722/>
- Giles, M., Graham, L., Ball, J., King, J., Watts, W., Harris, A., ... Foureur, M. (2019). Implementation of a multifaceted nurse-led intervention to reduce indwelling urinary catheter use in four Australian hospitals: A pre- and postintervention study. *Journal of Clinical Nursing*, 29(5–6), 872–886. <https://doi.org/10.1111/jocn.15142>
- Giles, M., Watts, W., O'Brien, A., Berenger, S., Paul, M., McNeil, K., & Bantawa, K. (2015). Does our bundle stack up! Innovative nurse-led changes for preventing catheter-associated urinary tract infection (CAUTI). *Healthcare Infection*, 20(2), 62–71. <https://doi.org/10.1071/HI14035>
- Gokula, M., Hickner, J., & Smith, M. (2004). Inappropriate use of urinary catheters in elderly patients at a midwestern community teaching hospital. *American Journal of Infection Control*, 32(4), 196–199. <https://doi.org/10.1016/j.ajic.2003.08.007>
- Gould, C. V., Umscheid, C. A., Agarwal, R. K., Kuntz, G., Pegues, D. A., & Healthcare Infection Control Practices Advisory Committee. (2010). Guideline for prevention of catheter associated urinary tract infections 2009. *Infection Control & Hospital Epidemiology*, 31(4), 319–326. <https://doi.org/10.1086/651091>
- Green, S. A., Bell, D., & Mays, N. (2017). Identification of factors that support successful implementation of care bundles in the acute medical setting: A qualitative study. *BMC Health Services Research*, 17(1), 120. <https://doi.org/10.1186/s12913-017-2070-1>
- Greenhalgh, T. (2018). *How to implement evidence-based healthcare* (1st ed.). West Sussex, UK: John Wiley & Sons.
- Hoffmann, T. C., Glasziou, P. P., Boutron, I., Milne, R., Perera, R., Moher, D., ... Michie, S. (2014). Better reporting of interventions: Template for intervention description and replication (TIDieR) checklist and guide. *British Medical Journal*, 348, g1687. <https://doi.org/10.1136/bmj.g1687>
- Krein, S., Kowalski, C., Harrod, M., Forman, J., & Saint, S. (2013). Barriers to reducing urinary catheter use: A qualitative assessment of a state-wide initiative. *JAMA Internal Medicine*, 173(10), 881–886. <https://doi.org/10.1001/jamainternmed.2013.105>

- Lennox, L., Green, S., Howe, C., Musgrave, H., Bell, D., & Elkin, S. (2014). Identifying the challenges and facilitators of implementing a COPD care bundle. *BMJ Open Respiratory Research*, 1(1), e000035. <https://doi.org/10.1136/bmjresp-2014-000035>
- Li, S., Jeffs, L., Barwick, M., & Stevens, B. (2018). Organizational contextual features that influence the implementation of evidence-based practices across healthcare settings: A systematic integrative review. *Systematic Reviews*, 7(1), 72. <https://doi.org/10.1186/s13643-018-0734-5>
- May, C. R., Johnson, M., & Finch, T. (2016). Implementation, context and complexity. *Implementation Science*, 11(1), 141. <https://doi.org/10.1186/s13012-016-0506-3>
- Meddings, J., Rogers, M., Krein, S., Fakh, M., Olmsted, R., & Saint, S. (2014). Reducing unnecessary urinary catheter use and other strategies to prevent catheter-associated urinary tract infection: An integrative review. *BMJ Quality and Safety*, 23, 277–289. <https://doi.org/10.1136/bmjqs-2012-001774>
- Parker, V., Giles, M., Graham, L., Suthers, B., Watts, W., O'Brien, T., & Searles, A. (2017). Avoiding inappropriate urinary catheter use and catheter-associated urinary tract infection (CAUTI): A pre-post control intervention study. *BMC Health Services Research*, 17(1), 314. <https://doi.org/10.1186/s12913-017-2268-2>
- Resar, R., Griffin, F. A., Haraden, C., & Nolan, T. W. (2012). *Using care bundles to improve health care quality*. Retrieved from Cambridge, MA: <https://www.urotoday.com/images/catheters/pdf/IHIUsingCareBundlesWhitePaper2012.pdf>
- Saint, S., Meddings, J., Calfee, D., Kowalski, C., & Krein, S. (2009). Catheter-associated urinary tract infection and the Medicare rule changes. *Annals of Internal Medicine*, 150(12), 877–884. <https://doi.org/10.7326/0003-4819-150-12-200906160-00013>
- Saint, S., Trautner, B. W., Fowler, K. E., Colozzi, J., Ratz, D., Lescinskas, E., ... Krein, S. L. (2018). A multicenter study of patient-reported infectious and noninfectious complications associated with indwelling urethral catheters. *JAMA Internal Medicine*, 178(8), 1078–1085. <https://doi.org/10.1001/jamainternmed.2018.2417>
- Thorne, S. (2008). *Interpretive description*. Walnut Creek, CA: Left Coast Press.
- Tong, A., Samsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal of Quality in Health Care*, 19(6), 349–357. <https://doi.org/10.1093/intqhc/mzm042>

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

How to cite this article: Parker V, Giles M, King J, Bantawa K. Barriers and facilitators to implementation of a multifaceted nurse-led intervention in acute care hospitals aimed at reducing indwelling urinary catheter use: A qualitative study. *J Clin Nurs*. 2020;29:3042–3053. <https://doi.org/10.1111/jocn.15337>