It Depends

Decision-Making for Insertion and Removal of Short Peripheral Catheters

Annette M. Bourgault, PhD, RN, CNL, FAAN • Daleen A. Penoyer, PhD, RN, CCRP, FCNS, FCCM • Michele J. Upvall, PhD, RN, CNE, FAAN

ABSTRACT

Short peripheral catheters (SPCs) are frequently idle when they are not being used for clinical indications. Focus group interviews were performed with multidisciplinary clinicians at a large tertiary hospital to explore SPC practice related to inserting or maintaining idle SPCs. Findings indicated that decision-making regarding insertion and removal of peripheral intravenous catheters depends on internal and external influences, such as the clinicians' knowledge and skills, emotional responses, expectations of others, organizational policies and practices, and the patient. In today's complex health care environment, the need for an SPC may constantly change, yet decision-making about SPC insertion and removal must remain patient-centered and evidence-based.

Key words: clinicians, deimplementation, focus group, hospital, intravenous, nurses, practice, qualitative, short peripheral catheter, vascular access

As many as 20% to 50% of short peripheral catheters (SPCs) do not meet evidence-based clinical indications and remain idle (ie, unused),[1] often after 72 hours of no use.[2] SPCs are a frequently used invasive medical device in hospitals[3] and more than 330 million SPCs are purchased annually in the United States.[4,5] While SPCs are extensively used in health care settings for procedures and treatments, they can also lead to decreased patient satisfaction.[3] As SPCs are invasive devices, their placement can lead to severe complications and vein depletion. As many as 32% of patients with SPCs experience painful complications, such as phlebitis, occlusion, infiltration/extravasation, and dislodgement.[6] Additionally, women[6] are more likely to experience complications, such as phlebitis and occlusion. Over time, complications can lead to peripheral vein destruction and eventual depletion, impacting the availability of peripheral veins for use in both current and future admissions. Thus, inserting and maintaining nonessential SPCs may create unnecessary patient safety risks for complications, delays in care, or need for invasive and central venous catheters from a lack of viable veins and/or pain and suffering related to SPC care.[7] It is estimated that the cost for an SPC from insertion to maintenance over 3 days is approximately $140,[3] and replacing SPCs when clinically indicated had an estimated cost savings over a 5-year period of $400 million (US equivalents).[4,8] Multiple attempts for insertion, replacement of SPCs, and complications only add to the costs associated with SPC use. To continue placement of SPCs that are not used for treatments only adds to the costs of maintenance and exposes patients to risks of complications, dislodgement, and dissatisfaction.

While evidence-based clinical indicators for SPCs include administration of medication, fluid, blood products, or parenteral nutrition,[9] SPC insertions occur without immediate

Author Affiliations: *University of Central Florida, College of Nursing, Orlando, Florida (Dr Bourgault); Orlando Health, Orlando, Florida (Drs Bourgault and Penoyer); Vin University, College of Health Sciences, Hanoi, Vietnam (Dr Upvall).*

Annette M. Bourgault, PhD, RN, CNL, FAAN, *has been a critical care nurse for more than 36 years and has been performing clinical research on evidence-based nursing practices such as intravenous catheters and feeding tube verification for more than a decade. She has also published studies on deimplementation of low-value practices.* **Daleen A. Penoyer, PhD, RN, CCRP, FCNS, FCCM,** *holds a PhD in nursing and a certification as a clinical research professional. She has more than 45 years of nursing experience and has held roles in academia, advanced practice, research, and leadership. She is a fellow clinical nurse specialist and fellow in critical care medicine. Dr Penoyer serves as the director for the Center for Nursing Research at Orlando Health in Orlando, Florida, and is an active nurse scientist.* **Michele J. Upvall, PhD, RN, CNE, FAAN,** *is professor and vice dean of nursing at the College of Health Sciences at VinUniversity in Hanoi, Vietnam. She has extensive experience as a nurse educator and qualitative researcher with an emphasis on global health.*

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Corresponding Author: *Daleen A. Penoyer, PhD, RN, CCRP, FCNS, FCCM, Center for Nursing Research and Advanced Practice Nursing, Orlando Health, 1404 Kuhl Ave, MP 161, Orlando, FL, 32806 (Elizabeth.Penoyer@orlandohealth.com).*

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clinical use. Determination for the need of an SPC should be based on patient acuity and clinical need.[10] SPC insertion is also routine practice for patients requiring telemetry, specific radiologic procedures, or anticipation of imminent emergency medication administration. SPCs are also inserted for the purpose of blood collection, despite no clinical indication for continued intravenous (IV) access, and many such SPCs remain unused.[2] Many clinicians, especially in emergency departments (EDs), insert SPCs "just in case" they may be needed at a later time, although there is no evidence that the placement of SPCs alone improve patient outcomes.[11] One study showed that 50% of SPCs inserted in the ED were unused, and 43% remained idle after 72 hours.[2] An international study reported that failure rates for first-attempt SPC insertions in adults were as high as 40%, and 52% of these patients reported moderate-to-significant pain related to SPC insertions.[12] The Infusion Nurses Society (INS) *Infusion Therapy Standards of Practice* recommend that SPCs should be removed if they are no longer part of the patient's care plan or if not used for 24 hours[13] and that SPCs should be reassessed daily and removed if SPC-related complications are present.[4,13,14] While this part of the guidelines suggests that SPCs should be used when "clinically indicated," it is not clear as to which other factors might be considered for indications in a care plan beyond infusions or general use.

At our study site, a large, tertiary care medical center in the southeastern United States, 16% to 22% of SPCs were inserted for no known reason,[15,16] and 43% of SPCs were not used for any clinical functions.[16] Additionally, 62% of SPCs were removed immediately prior to patient discharge, suggesting that many were left in situ just in case.[15] Given clinical observations and discussions in the literature that many SPCs are idle and not used for delivering medications or infusion,[3] little is known about the reasons that idle SPCs remain in place.

The purpose of this study was to explore clinician perceptions and practices related to idle SPCs and clinician rationale underlying the practice of inserting and maintaining idle SPCs. In this study, an idle SPC was defined as a short, flexible catheter placed in a peripheral vein without clinical indication: not used for IV fluids, medications, blood products, or parenteral nutrition for 24 hours.[13]

METHODS

Design

Descriptive qualitative inquiry using interdisciplinary clinician focus groups guided this study.[17,18] Original estimations for each of the 3 focus groups included 8 clinicians for a total of 24 participants; these estimates allowed flexibility to extend the number of participants and focus groups based on achievement of data saturation.

Setting

This study was performed at an 808-bed adult, tertiary hospital in the southeastern United States. The study was conducted in 3 acute care units: the ED, medical progressive care unit, and an acute care medical unit. The units selected for the focus groups were aimed to assess SPC use across various clinical settings and levels of care and patient acuity where IVs are inserted.

Procedures

Ethical Review

This study protocol was determined to be exempt human research by the university and hospital institutional review boards. An explanation of research was discussed prior to focus groups and a paper copy provided to individual participants. Their attendance and participation implied consent to be in the study.

Recruitment

Purposive sampling was used to recruit key clinician stakeholders who had experience with SPCs or related practices (nurses, advanced practice nurses, physicians, pharmacists, paramedics, others) to participate in a 1-hour focus group.[19,20] Timing of the focus groups was selected to optimize maximal participation including clinicians from both day and night shifts. Unit managers assisted with advance recruitment by email, flyers posted on the study units, and personal reminders on the day of the focus groups.

Data Collection

Focus groups were planned on the study units with the aim of sampling until saturation was determined. All of the researchers facilitated the focus groups and generated written field notes. Field notes included contextual information and nonverbal communication. Demographic data were collected (sex, professional role, and highest degree) from all of the participants by printed form at the time of the focus group. Semistructured interview questions (Table 1) focused on SPC practice related to inserting or maintaining SPCs that were not being used for clinical interventions. Questions were structured to elicit feedback on SPC practices and decision-making related to insertion or removal of idle SPCs.[21] All of the focus groups were audio recorded by digital recorder for later verbatim data transcription for analysis. Multiple focus groups allowed for comparison of codes and themes between groups, achieving a reliability check.[22]

Data Analysis

A research assistant transcribed the interviews verbatim. Thematic analysis was used to explore the narrative derived from all of the interviews.[18,23] The researchers reviewed transcripts independently, followed by a joint review of the transcripts for development of structural codes. Contextual information and nonverbal communication from written field notes were included in data analysis and interpretation of the data.[24] Five rounds of analyses were performed; all researchers came to consensus on the developed codes and their definitions. The next step of analysis after coding

TABLE 1

Initial Interview Questions

1. Have you ever cared for a patient with an SPC that is not being used?
2. What concerns do you have if a patient does not have IV access?
3. Have you ever encountered a situation in which a patient did not have IV access and there was an immediate need for access? What happened in this situation?
4. Can you discuss the challenges you have experienced when caring for someone with an SPC?
5. Can you think of any practice changes that might improve patient satisfaction related to SPCs?
6. In your unit or organization, who makes the decision to insert and remove SPCs?
7. Can you describe the reasons for placing an SPC when there are no treatments ordered?

Abbreviations: IV, intravenous; SPC, short peripheral catheter.

TABLE 2

Participant Demographics[a]

Demographic characteristic	n	%
Gender		
Female	27	68
Male	13	33
Professional role		
Registered nurse	27	68
Medical doctor	6	15
Pharmacist	2	5
Emergency medical technician	2	5
Advanced practice registered nurse	2	5
Other	1	3
Highest level of education		
Associate degree	10	25
Bachelor's degree	16	40
Master's degree	5	13
Doctorate degree	9	23

[a]Percentages do not equal 100 due to rounding.

was synthesis of codes into category and theme development. Individual codes were integrated with specific participant data from the transcripts. Codes were reconfigured into clusters or categories of data to facilitate the process of data synthesis.

Rigor

Methods used to attain credibility included individual analyses by all of the investigators followed by consensus after each round of data analysis. Notes were taken during team meetings to describe decision-making during the analysis process, which promoted confirmability. Transcripts were reviewed by investigators for accuracy to ensure dependability. Transferability was enhanced by ensuring that participants represented clinician stakeholders from a variety of disciplines and practice areas.

RESULTS

A total of 5 focus groups took place in a private conference room at the hospital. The mean length of time for sessions was 43 minutes. The type and number of clinicians who participated in the group varied and ranged from 5 to 10 team members per session (total N = 40) and consisted of nurses, physicians, advanced practice nurses, paramedics, pharmacists, and a social worker from 3 clinical units (Table 2). Throughout the focus groups, researchers noted the interactions of participants. Discussion was lively across the focus groups with apparent synergy among participants. This synergy is a hallmark of focus groups, as individual participants stimulate discussion among all focus group members.[25]

Major Themes

"It depends" emerged as the major theme in response to the research question of, "What is your decision process for maintaining SPCs in patients when not being used for clinical interventions?" While this theme invokes ambiguity, participants were highly vocal and emotional when discussing the rationale for maintaining SPCs. Two major categories emerged, internal influences and external influences. These categories represent the cognitive and emotional responses to SPC decision-making by clinicians, as well as external factors that were outside the clinicians' control. For additional specificity, subcategories were identified within each category (Figure1). These subcategories were derived from 13 major codes. The categories and subcategories illustrate the wide scope of influence on decision-making related to idle SPCs. Table 3 contains participant quotes aligned with categories.

Internal Influences

The subcategories composing internal influences included knowledge and skills directly related to SPC insertion and maintenance, as well as emotional responses. The focus of this subcategory centered on the clinicians' ability to anticipate and meet the complex needs of patient care. The nurse's skill level for inserting SPCs, including the ability to be efficient and organized, was also considered within the internal sphere of the clinician.

Knowledge and Skills

Nurses expressed concerns that they may not have the skills required to insert an SPC in a time of critical need if the patient's acuity level deteriorated. This concern was expressed by nurses who worked in settings with lower acuity and those who were novice nurses.

Emotional Responses

Affective or emotional responses were noted as clinicians discussed having SPC access "just in case" and their concerns and fears related to not having SPC access if needed.

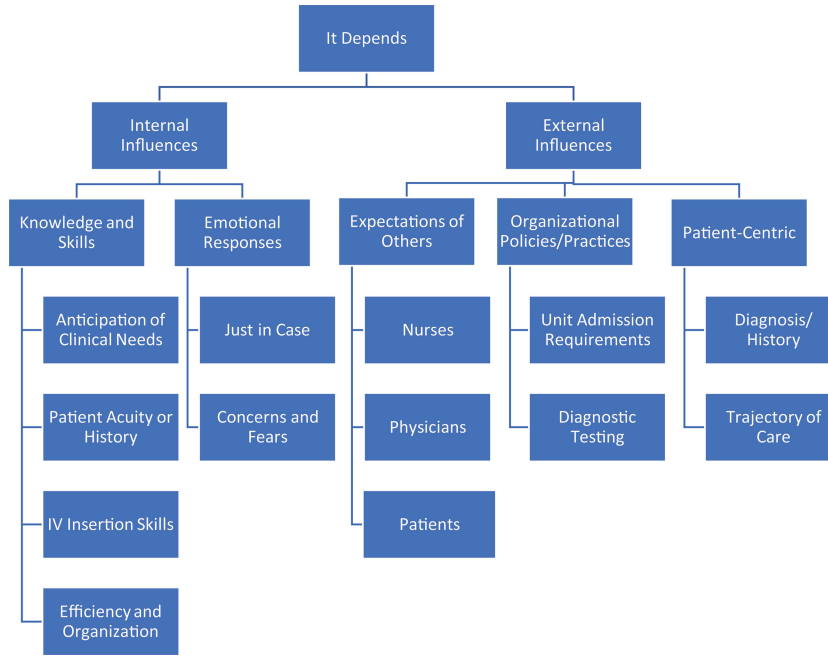

Figure 1 Decision-making process for inserting and maintaining idle short peripheral catheters. *Abbreviation: IV, intravenous.*

Several participants appeared to relate to the statement "We love our IVs." Learning from the discussion, the participants indicated they liked to have IVs so that they are prepared just in case something bad happens or they need the IV for other things that would avoid another painful stick.

Codes related to these values and beliefs included the attitude of "just in case," the cognitive or critical thinking processes of the nurses, and emotions, especially the emotion of fear. Some nurses commented that SPCs left in place often don't work when you want them to anyway, yet there was overwhelming support of the perception that the placement of an SPC was equivalent to having IV access in an emergent situation. Nurses who were more confident in their SPC insertion skills often contradicted the idea of a just-in-case SPC when they made statements about being able to "get one in quickly." Despite this, many participants used the phrase *just in case* throughout the focus group. The phrase *just in case* was sometimes inferred but still pertinent, especially in the context of persuading a patient to leave the SPC intact. Nurses also expressed concern for their patient's safety and well-being, but some of them also expressed fear of failure, such as not being able to access a vein when needed. Fear of legal repercussions was indirectly related to timely insertion or diagnostic laboratory tests. Nurses wanted to be prepared and stay one step ahead to avoid holding up necessary diagnostics that could impact the patient's plan of care.

External Influences

The primary focus of the external context of SPC decision-making was the expectations of others, including nurses from other units, physicians, and the patient. Second, the perception that the organization's policies and practices related to SPC insertion and removal were discussed and intertwined with the expectations of others. The actual needs of the patients or maintaining a patient-centric focus were also discussed. These 3 categories are presented in no particular order; clinicians often included all 3 external categories during the discussion.

Expectations of Others

Expectations of nurses included fear of punitive action as a motivator. Certain physicians were viewed as drivers for SPC insertion regardless of patient acuity or anticipatory need. Nurses expressed the need to stay one step ahead of the physician as one way to improve workload efficiency. One physician participant's opinion was that "If a patient doesn't have an IV, they don't need to be in the hospital." Patient expectations varied, and participants believed that most patients expected an SPC, especially on the admission end of their hospitalization, as if it were a rite of passage, justifying their visit to the hospital. During one focus group, discussion of patient expectations centered on the "drama" of having an SPC inserted and its implications.

Organizational Policies/Practices

The 2 major codes within this category included unit admission requirements and diagnostic testing. Of all the subcategories, discussions around policies generated the most confusion. Many clinicians made decisions based on what they believed to be true, but many were confused about whether organizational policies of SPC requirements for admission, telemetry, or certain diagnostic tests actually existed. All of the participants stated that patients on telemetry monitoring required an SPC. Participants from the progressive care unit, where telemetry is used to monitor all patients, also discussed the need to persuade patients to maintain SPC access "just in case." Most clinicians perceived a policy-based need to maintaining an SPC

TABLE 3

Participant Quotes (N = 40)[a]

Internal influences: knowledge and skills	"...and I think that's how they work as nurses and stuff, like how we think. I mean you're always...I mean since day one in nursing school you always imagine the worse and think ahead of what could happen. I mean this patient could be walky talky and perfectly fine and in the next second, you're calling...because he's got sepsis... come help me." "Critical thinking. I mean we're always thinking the worst. Worst case scenario. And again, it's very patient specific." "...so that's the just in case. We've had patients that were fine and the next thing you know they're coding." "I think you just have to learn to anticipate anything happening."
Internal influences: emotional responses	"Sometimes patients will ask me. Why do I still need it? Like if they're not getting anything. We'd like to have it just in case." "...I have a patient who's blood pressure bottoms out and all of a sudden they need fluids. So, to me that's like a just in case thing." "You know there is an anticipated discharge and so they [the patient] do start requesting once they hear the word discharge. Can I go ahead and get this out now? Let's hold onto it. That will be the last thing I remove. For that reason, just because you don't know. There have been situations where the patient has a problem." "That's kind of the rule I've always used even when somebody is discharged. It's as you're exiting the door...I'm going to take the IV out. It's gonna be in that motion. It'll be the last thing I take. Just because if you need it, you're gonna need it." "So leaving the IVs in, even if they're not being used on the units, leaving them in until the last minute probably helps alleviate some fear about what if. What if something goes bad with the patient? What if I can't get an IV?" "Not having the access and it's an emergency." "My fear is that, I guess since I was a new nurse, I would definitely bring extra [IV supplies], but now as I'm getting more skilled..." "But if you're not good at something...you would rather want it done already. Because now I have to go in here and possibly stick them three times because you're not good at it. It's not something you do. So that is fearful..." "I think my worry is less down here because if I need one, I can place one. Rather than upstairs where I wasn't sure I could place one because I wasn't so good at it and I had much more worry. It takes us very little time to put an IV in because we do it...we're competent in doing it. Whereas upstairs I wasn't, so it was worrisome." "It's definitely the culture in America. Cover your...Try not to miss anything 'cause people are very sue happy here."
External influences: expectations of others	"I think it's been common practice to practically put a line in everybody and it's been an expectation from the floor when you call report they want to know that they have access and they are not happy with us if we send them up with a patient who doesn't have access. So if we deem the patient doesn't need a line and then go up, then it's not uncommon for an incident report to be made that the ED sent them a patient without access." "...I think that all the units have pretty much the same kind of expectation that when they get report when they read into Sunrise [institutional EMR] what's going on with the patient? The first thing that was asked is where is the line and is it patent?" "I'd say a particular physician is on and everyone gets a line from that doctor." "There are certain physicians who have expectations. And the staff get to know that and so they automatically, rather than dealing with the wrath of so and so, they'll just stick a line in everybody or just do a particular task before the physician sees the patient." "Patients who are medically cleared for discharge, technically, do not need IVs. Most of the time...nurses call us to say it is out because the medication is PO. But patients who are actively inpatient for one thing or the other, do need IV access." "I would say about 50-60 percent of our population knows what they want when they come here." "And I think to some extent too, there's an expectation from patients that to be treated they have to have a line. Like, you come to the hospital, you get a diagnosis, you need an IV, and you need medicine. If you don't get an IV, you don't get medicine, then they're not treating you right. So, the expectation of the patient sometimes is: aren't you going to start an IV? I always get an IV and they put it over here. So sometimes they come in with expectations." "They'll say, I don't want a shot or pain pill. I want it straight through the IV. I want it to work right away. Or, I don't want a pill that's not going to work, I want an IV. So yeah, there's multiple instances of them requesting an IV vs other." "I kind of feel a lot of that goes back to patient satisfaction. Sometimes...it may be 30 minutes, even though they're in the room, maybe 30-45 minutes before anyone goes in to see them. So, the fact that they have a warm body in there working with them, talking with them, and getting things started makes them feel: OK, they haven't forgot about me in this room." "It makes them feel like they're being treated. I see it a lot. Like, when you give them the IV, they're like, now they're finally doing something. If you don't do anything for them, it's like you're sitting there. Nobody's seeing me, nobody's doing nothin'. But when they see the IV, it's like oh yeah, now they're doing something. Now they're fixing me." "It's a whole show, 'cause we're sitting there, were preparing it, we're doing this. It's like when you go to a fancy restaurant and they're doing the thing at the table."

(*continues*)

TABLE 3

Participant Quotes (N = 40)[a] (*Continued*)

External influences: organizational policies/ practices	"What I have found here on telemetry is when we are no longer giving them a lot of IV medications they're like 'why can't we have this taken out' and that's when we have to go into the talk of, well you're on the telemetry monitor. If you're still being monitored there's got to be a reason and if we have the monitor we need to still have the IV." "…it was my understanding, the same thing, anyone to telemetry or higher has to have access." "If we're gonna straight stick somebody that we feel like is going gonna need fluids or potassium or some type of replacement, we're gonna get a line in them. But if we feel like they're not going to need anything, then we don't get it. So, it's kind of nursing judgment and if we lack that judgment or if we're unsure we always ask the providers." "The main reasons I choose to just start IV on people is because…you draw one set of labs and then in 30 minutes, 10 minutes, another thing is ordered, so it just saves them from being poked again." "…or sometimes we just do it just in case they order a CT scan, because we know they're going to order blood, or they do order blood but no CT scan, and then based off the blood they're gonna order a CT scan."
External influences: patient centric	"…and you also look at some of the diagnosis because some of my patients are IV drug users. So, are they hard sticks?" "They would rather keep it than know that they have to get an another one started." "If they're anemic, you're looking at H&H's [hemoglobin and hematocrit], are they going to receive blood? Is it pancreatitis? We're giving, we are pushing fluids. These are things that you take into consideration when you're caring for your patient…They're going to go down to endoscopy so they're going to need IV access. Some different things. You have to definitely look at your patient in the whole and what's going on with them. Why they're here. How long they're going to be here. Things like that." "I would say 90% of patients that come to the ER, maybe a little bit less, all get full type of lab work done. So, I think in our mind and our… interest of saving time… we do start the IV…, right away, even if we know it's not going to be used. Maybe just because we're gonna be getting labs and then maybe not, if…it's not going to be used, but there's always potential that they're gonna use it." "If we're worried about some complications and the patient has a heart issue and we have to monitor them or something, then I think we should keep the patient with an IV line in case of having an emergency." "The anticipation of admission…if they already came in with abnormal labs, that was their chief complaint. Then we can pretty much anticipate that there's usually going to be electrolyte replacement or blood product replacement or something to that extent." "I like to leave them, especially with a patient who their blood pressure is all over the place, if they tend to, you know, have a spike in blood pressure and it'll be a few hours 'till their next scheduled medication or what have you." "…he was kind of up and down…he would not have an IV, then he would have an order where he would need an IV. I mean, but then something would happen to where he did need an IV you know. So, situations like that it could be a little sticky if something critical were to happen." "So, with those type of patients I try to anticipate, you know, ok, you're trying to lower their blood pressure and say I'm going to leave this…" "…pharmacy reports in general are pretty hard to convert anything that is available PO. You know it works just as well from IV to PO and we have a lot of interchanges that allow us to do it automatically."

Abbreviations: CT, computerized tomography; ED, emergency department; EMR, electronic medical record; ER, emergency room; H&H, hemoglobin and hematocrit; IV, intravenous; OK, okay; PO, by mouth.

[a]All references to IV are related to short peripheral catheters.

for all of the patients who were being monitored by telemetry. SPC organizational practices were related to meeting the expectations of others and relying on these expectations when unsure of what to do. Clinicians in the ED also stated that SPCs were frequently inserted to administer contrast medium for diagnostic tests, such as computed tomography angiogram, and inserted to obtain blood specimens for laboratory testing.

Patient-Centric

Concerns for the well-being and safety of patients were at the forefront of the group discussions. A patient's admission diagnosis may warrant an SPC, especially when standardized admission orders are being followed. A patient's diagnosis and acuity level came up frequently in the focus group discussions.

The patient's past history also played a role, especially in the context of available peripheral IV access. If a patient had more than 1 SPC, nurses stated that they would reassess the need and remove the extra catheter if unused. Another example of past history that resonated with many nurses on the medical unit was history of past IV drug abuse; nurses expressed eagerness to remove the SPC as soon as it was no longer needed to promote patient safety.

Clinicians base many of their decisions on dynamic factors throughout the patient's trajectory of care. These factors include anticipation of admission or discharge and changes in acuity that might dictate clinical indications for SPC use. Pharmacists also mentioned the need for the clinical team to transition to oral medications when IV medications were no longer required. Expectations of others and possible repercussions related to organizational policies and practices played a strong role in SPC decision-making, but these were balanced by the personal values and beliefs of nurses.

DISCUSSION

Based on the *Standards* and concise clinical indicators for SPC insertion and maintenance, the researchers were initially biased toward the idea that all SPCs that were not clinically indicated and/or idle should be deimplemented. For example, if there was no order for an SPC insertion or a clinical indicator for use of an SPC, then no SPC should be inserted into the patient at that time or the SPC should be removed as soon as possible. Following the focus group interviews and analyses of the data, the investigators recognized that decision-making about SPCs was more complex than initially anticipated. Although the *Standards* are evidence-based,[13,26] the focus group data suggest that some of the standards regarding idle SPCs may be idealistic based on today's increasingly complex and ever-changing health care environment.

Consistent with the findings in this study, Mestre et al[27] found that a large volume of SPCs (30%) were not discontinued until the time of hospital discharge, although many of these SPCs were idle.[27] Recommendations supported by the INS white paper[26] include daily reassessment for SPC need based on the plan of care. Removal of unnecessary SPCs is considered primary prevention for associated complications with IV therapy.[28]

When the term *just in case* was used as a prompt for one of the focus group questions, several clinicians were quick to disagree, and several stated that there was "no such thing." Despite these rebuttals, the term *just in case* was used regularly by participants in all of the focus groups. During the focus groups, a few clinicians changed their minds; although they did not like the terminology being used, they thought that *just in case* was "a very real and regularly occurring phenomenon in the clinical setting." These concerns seemed to be held more predominantly by clinicians who worked with patients of higher acuity, such as the ED and telemetry units. Clinicians frequently made comparisons between *just in case* and anticipatory thinking, an important skill learning in their academic nursing/medical programs. The *just in case* phenomenon has been associated with EDs; however, it has been challenged as ritualistic and engrained in institutional culture.[11] This perceived culture of convenience may outweigh patient safety, financial cost, and clinician time when SPCs are initiated or maintained when not clinically indicated.[11] A distinction for SPC insertion or maintenance may be required based on patient acuity. While a *just in case* SPC may not be appropriate for a patient of low acuity without clinical indications, anticipation of clinical indications may need to be considered versus actual known indications for the establishment of an SPC in a high-acuity patient with multiple concurrent clinical needs. The study theme *it depends* supports that a distinction for SPCs be made based on patient acuity and anticipated need balanced with an awareness of potential complications related to idle SPCs.[1]

Some study participants perceived that inserting an SPC instead of performing phlebotomy to obtain blood samples was beneficial for the clinician, saving time and equipment, and also beneficial for the patient because it often avoided duplicate, unnecessary venipunctures and potential discomfort. Although blood sampling through SPCs is not uncommon, drawbacks described in the literature include increased risk for SPC occlusion and increased risk for infection due to fibrin deposits in the catheter.[11] Additionally, blood samples collected by an SPC versus a butterfly (ie, winged) needle have resulted in high levels of hemolysis requiring repeat blood samples.[29] Clinicians are encouraged to assess risk versus benefit when making decisions about using a vascular access device to obtain blood samples versus performing a venipuncture.[26]

Clinical pharmacists reminded study participants to consider transitioning patients to oral medications when the patient has stabilized and IV medication is no longer required. In some cases the oral form of a medication is equally efficacious.[30] Pharmacists also reminded participants that some oral medications may work better than the IV form and may also be safer for the patient. Additionally, clinical pharmacists reported that delays in treatment may

occur when the injectable form of a medication requires preparation and the oral form is available for immediate dispensing. Delays in converting patients to oral medications were also reported in the study institution due to failure to update diet orders in the electronic medical record in a timely manner. Converting injectables to oral antibiotics in patients with stabilized infections has been shown to decrease the need for IV therapy by up to 2 days.[30]

Nurses and physicians used different language when discussing conversations between the disciplines. Many nurses said that they collaborated with physicians on the need for SPC insertion or removal. In contrast, physicians discussed nurses calling them for approval to remove an idle SPC. Although nurses typically perform insertion, maintenance, and removal of SPCs, their scope of practice and autonomy appears limited. At the study institution, a physician's order was required by policy for insertion or removal of an SPC, thus validating the nurses' reasons for consulting a physician before making changes to an SPC. Another external influence was the belief that a policy existed for all patients on intermediate care units, such as telemetry and intermediate/progressive care, to have a vascular access device. It was later discovered that no policy existed, but standardized physician admission orders at the study institution typically included an order to insert an SPC.

Deimplementation (ie, termination or reduction) is necessary when a clinical practice is low value (harmful, inefficient, ineffective, and/or not cost effective)[31] to facilitate evidence-based practice.[32,33] Unlike implementation of a new practice, greater barriers such as psychological biases can interfere with deimplementation of an existing practice.[34] A lack of evidence exists about the barriers and facilitators to deimplement tradition-based or low-value clinical practices to guide best practice and reduce patient harm,[32,33] specifically deimplementing SPCs without clinical indications in hospitalized adults. Deimplementation of SPCs may refer to unnecessary SPC insertion or removal of an idle SPC. Similar to the deimplementation literature, emotional attachment to SPCs and biases based on past experiences appeared to be a barrier to contemplating removal of an idle SPC. Having an SPC in place appears to comfort the nurse, yet they may have a false sense of assurance that the device will be functional in the event of an emergency. A recent study of 1578 SPCs found that more than one third failed, the majority due to phlebitis.[6] During the focus groups, clinicians stated, "They were much more likely to say why don't patients have an SPC versus I think an SPC should be removed."

A surprising omission during the focus groups was lack of discussion about the cost of SPC supplies. Nurses talked about wasteful practices, such as bringing their own supplies into a room when a colleague requested assistance inserting an SPC. This practice often led to excess wasted supplies that could not be returned to the general supply stock. Nurses agreed that they each had their own system for inserting SPCs and perceived that the equipment required was nurse specific versus procedure specific. These findings suggest that a review of SPC insertion supplies may be warranted to establish a unit-specific standard to minimize waste.

STRENGTHS AND LIMITATIONS

Strengths in the study were that the focus groups included a wide variety of clinical practitioners with influence and use of SPCs. Additionally, the practice specialties varied and included emergent and acute care settings. Although the focus groups represented clinicians from a variety of disciplines and practice settings, one limitation was that no nurse managers participated. The study did, however, have representation from clinical nurse specialists who had formal leadership roles that influence practice.

IMPLICATIONS FOR PRACTICE

Clinicians were encouraged to be mindful about clinical indicators for SPCs and help to increase awareness among their colleagues about idle SPCs. This is a future opportunity within the organization to work with the ED team members to explore SPC practices with patients of lower acuity who are unlikely to be admitted as inpatients to the main hospital. It is possible that fewer SPCs may be indicated in this subset of the ED population, especially because most patients in the low-acuity area of the ED are discharged in $<$180 minutes. According to one of the nurses, an SPC is "the last thing they [lower acuity patients] needed."

The intent of this study was to obtain a better understanding of idle SPC practices to inform future development of a systematic deimplementation protocol for SPCs.[26,35] In this context, deimplementation includes unnecessary SPC insertion and removal of idle SPCs. As a starting point, increasing awareness of SPC complications and failure is needed across the disciplines. Because physicians within the study organization owned the authority to make decisions about SPC removal, they must be included in any educational programs. Moreover, nurses should be empowered to advocate for patients without clinical indications to avoid inserting and/or maintaining an SPC, shifting the focus for SPC insertion and removal to the patient versus physician preference or anticipated future need. An increased awareness of alternate options for fluid and medication administration in an emergency, such as the intraosseous route, may also alleviate anxiety about just-in-case needs.[36] This study data suggest that key stakeholders for development of an SPC deimplementation process should also include clinical pharmacists. Additionally, a reliable and valid SPC assessment tool, such as I-DECIDED, can be used to assist clinicians with early recognition of SPC complications and promote early removal.[28]

Another implication for practice is related to insertion of SPCs into the antecubital fossa area, a common practice in the ED. While this access was deemed the easiest to achieve, other clinicians commented on patient dissatisfaction with the antecubital site because it induced frequent pump occlusion alarms in addition to be uncomfortable or even painful when their arm was bent. In acute situations, use of the best venous access site available may be warranted, such as treatment of acute sepsis. Some patients present emergently to the ED without a known history or immediate understanding of their needs. As the participants told us, one size doesn't fit all…it depends.

A recently published INS task force white paper, "Vascular Access Device Care and Management: A Comprehensive Organizational Approach[26]" supports the need for organizations to comprehensively review their policies related to vascular access and standardize SPC practice to the greatest extent possible for best possible outcomes. This white paper supports the need for additional education to familiarize clinicians with variables effecting SPC practice. Standardizing policies across all units within the organization may not be possible, but a rational attempt to develop policy using locally derived evidence should be the goal.[26] A clear understanding of SPC practices throughout the organization by all disciplines may reduce the external expectations by other clinicians, enhance consistency of SPC use, and minimize conflict between clinicians. Evaluation of existing policies in relation to unnecessary insertion, maintenance of idle SPCs, and processes for removal are important considerations.

CONCLUSIONS

In today's complex health care environment, the need for an SPC may be constantly changing. Changes in patient acuity and multiple transitions in settings and trajectory of care can influence decision-making in a dynamic environment. Both patients and clinicians have an unspoken understanding that the SPC is a rite of passage into the hospital, and when an SPC is no longer needed, the patient is ready for discharge. SPCs were often the last device removed before the patient exited the hospital. Congruent with the deimplementation literature, decisions around the management of idle SPCs are often emotionally charged by both the patient and the clinician. While patient satisfaction is a consideration, most clinicians attempted to balance the expectations of others with meeting the needs of the patient. Development of an SPC deimplementation process is needed to increase awareness of SPC complications and failure rates and ensure that decision-making for SPC insertion and removal is patient centered.

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