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Facilitators and Barriers to Implementation of Safe Infant Sleep Recommendations in the Hospital Setting

Eve R. Colson,
Department of Pediatrics, Washington University School of Medicine, St. Louis, MO.

Paula Schaeffer,
Department of Pediatrics, School of Medicine, Yale University, New Haven, CT.

Fern R. Hauck,
Department of Family Medicine and a professor in the Department of Public Health Sciences, School of Medicine, University of Virginia, Charlottesville, VA.

Lauren Provini,
Department of Pediatrics, Children's Hospital of Philadelphia, Philadelphia, PA.

Mary McClain,
Slone Epidemiology Center, Boston, MA.

Michael J. Corwin,
School of Medicine, Boston University, Boston, MA.

Emily E. Drake,
Department of Family, Community and Mental Health Systems, School of Nursing, University of Virginia, Charlottesville, VA.

Ann L. Kellams,
Department of Pediatrics, School of Medicine, University of Virginia, Charlottesville, VA.

Nicole L. Geller,
Baan Dek Foundation, Chiang Mai, Thailand.

Kawai Tanabe,
Department of Family Medicine, School of Medicine, University of Virginia, Charlottesville, VA.

Rachel Y. Moon
Department of Pediatrics, School of Medicine, University of Virginia, Charlottesville, VA.

Abstract

Correspondence: Eve R. Colson, MD, MHPE, Department of Pediatrics, Washington University in St. Louis School of Medicine, 660 South Euclid Avenue, St. Louis, Missouri 63110, Eve.Colson@Wustl.edu.

Disclosure
The authors report no conflict of interest or relevant financial relationships.

Objective: To identify facilitators and barriers to implementation of safe sleep recommendations from the American Academy of Pediatrics (AAP) from the perspective of hospital staff as part of a needs assessment that was used to design a successful quality improvement intervention to change clinical practice.

Design: Qualitative design.

Setting: Multiple sites of three hospitals in the Northeastern and Southern United States. Participants: We used purposeful sampling to identify 46 participants who cared for infants on inpatient, hospital units (nurses and other staff members).

Methods: A qualitative researcher moderated the focus groups using grounded theory. We constructed the initial interview guide and then changed it as needed to capture more information about new ideas as they arose. Researchers from diverse backgrounds participated in the analysis and used the constant comparative method to select important concepts and to develop codes and subsequent themes. We continued to collect data until saturation was reached.

Results: We identified themes and subthemes, and the taxonomy fit into the Grol and Wensing framework for change in clinical practice. The six primary themes included *The Innovation Itself, The Individual Health Care Professional, The Patient, The Social Context, The Organizational Context*, and *The Economic and Political Context*.

Conclusion: Participants described facilitators and barriers to implementation of the AAP recommendations for safe infant sleep. Identification of these themes informed our quality improvement intervention to promote safe infant sleep. Findings can be used by others when faced with the need for similar change.

Precis

Participants identified facilitators and barriers to following safe sleep recommendations that can be used to promote practice change in the hospital setting.

Keywords

Safe sleep; infants; recommendations; clinical practice; quality improvement

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To decrease the risk of sudden unexpected infant death (SUID), the American Academy of Pediatrics (AAP) recommended that infants, including newborns, sleep in the supine position on firm mattresses without any objects present. In addition, the AAP recommended that infants sleep in the same rooms but not in the same beds as their caregivers (Task Force on Sudden Infant Death Syndrome, 2016). Health care providers can successfully promote safe practices for infant sleep by giving advice and by modeling these practices (Kellams et al., 2017). However, while some hospitals have used quality improvement methods to improve safe sleep practices (Geyer, Smith, & Kair, 2016; Kuhlmann, Ahlers-Schmidt, Lukasiewicz, & Truong, 2016; Rholdon & Dailey, 2016), the staff of many hospitals have not fully adopted these practices in their newborn or pediatric inpatient settings (Kellams et al., 2017).

During an infant's hospital stay, staff may not always model recommended safe sleep practices, and this may contribute to the lack of adherence to safe sleep practices by parents and others who care for infants at home (Kellams et al., 2017). Barriers to application in practice go beyond the behavior of individual health care providers. Multi-level system issues often need to be addressed to improve adherence to recommendations in the clinical setting. Grol and Wensing (2004) discussed the different levels within health care systems that can facilitate or hinder change in clinical practice and provided a framework from which to design and implement interventions. Six levels should be considered: *The Innovation Itself, The Individual Health Care Professional, The Patient, The Social Context, The Organizational Context*, and *The Economic and Political Context* (Grol & Wensing, 2004). In the context of safe sleep practices, barriers to the acceptance of the innovation itself, in this case the AAP safe infant sleep recommendations, have been identified. In our previous work, we found that some families were reluctant to place their infants in the supine position for sleep because they worried the infants could choke in that position (Moon, Oden, Joyner, & Ajao, 2010). In a more recent qualitative study, Raines (2018) found that parents had the same concerns.

CALLOUT 1

Similarly, the individual health care provider must be aware of evidence-based recommendations and be comfortable implementing them. In a recent integrative review, researchers examined NICU nurse adherence to safe sleep practices and found that while nurses were aware of the AAP safe sleep recommendations, some preferred the side position because of concerns about choking, respiratory status, and infant comfort (Naugler & DiCarlo, 2018). If health care professionals are concerned about or disagree with aspects of the safe sleep recommendations, or they do not know how to explain the recommendations to families, change is unlikely to occur. In 2016, Raines et al. found that when staff members in hospital inpatient units modeled safe sleep practice, parents are more likely to do the same at home.

The social context of a family also influences the likelihood of change. Researchers found that infant caregivers who received consistent recommendations adhered to those recommendations (Von Kohorn et al., 2010). Similarly, in a recent qualitative study, Raines (2018) reported that "other people," including grandmothers and siblings, influenced mothers' decisions regarding safe infant sleep practices.

Organizations, such as hospital systems, must also implicitly and explicitly support safe infant sleep practices. For example, if health care providers are expected to provide education during direct patient care, they must be given the time and resources to do so. Hospital protocols can also affect the consistent implementation of evidence-based guidelines (Rovell & Messer, 2012).

Activities outside of the organization at local, state, and national levels can affect adherence. For example, some states have implemented laws related to safe infant sleep. Connecticut recently enacted a law that requires all hospitals to provide written information to families consistent with the AAP safe sleep guidelines before hospital discharge of an infant. (Public

Act 15–39, 2015). Such laws could affect the behaviors of health care providers and infant caregivers.

To understand facilitators and barriers that exist to the implementation of evidence-based practice at these multiple levels, it is essential to conduct a needs assessment before design and implementation of any intervention (Grol & Wensing, 2004). More specifically, to understand key factors essential to enable health care providers to successfully teach and model AAP infant safe sleep recommendations within newborn and pediatric inpatient settings, we conducted focus groups with hospital staff members who care for infants at three different hospitals. Our goal was to identify facilitators and barriers to following safe sleep recommendations in this context. This qualitative study served as the needs assessment upon which we then developed and implemented a successful, hospital-based, quality improvement intervention (Kellams et al., 2017).

Methods

Because little is known about how to design and implement a successful intervention to improve adherence to the AAP safe sleep recommendations in the hospital setting, we used focus groups to explore this issue. Rather than testing a hypothesis, we hoped to generate ideas to inform the design and implementation of a hospital-based, quality improvement intervention. We chose focus groups because we believed that the topic would not be too sensitive and focus groups can promote a rich discussion among participants that is not possible with individual interviews (Krueger, 2015).

Settings and Sample

We conducted focus groups between March and May 2013 at three major medical centers: two in New England and one in the Southeast. The hospitals in New England were located in Bridgeport and New Haven, Connecticut. Both were part of a larger health system and were teaching hospitals with trainees. The other hospital was located in Charlottesville, Virginia and was a teaching hospital for the University of Virginia.

Sampling was purposeful in that we sought nurses, other health care providers, and other hospital staff with experience working with families of infants in a variety of hospital settings, including inpatient pediatric, NICU, and maternity (mother/baby) units (Hanson, Balmer, & Giardino, 2011). Before data collection, we received institutional review board approval from each of the sites. All participants were recruited via flyers placed on the units and all provided verbal, informed consent before participation. After informed consent and before beginning the focus groups, participants completed a questionnaire about their sociodemographic characteristics.

Data Collection and Analysis

At each hospital, a single research associate led the focus groups. These research associates were not known to the participants, had backgrounds in qualitative research, and had experience conducting focus groups. The focus group guide was created in an iterative fashion; we made changes to the questions based on what was learned through review of the previous transcript. The focus groups each lasted up to 1 hour and began with an

introduction to the goals of the focus group. Participants were informed that we wanted to hear their perspectives about the AAP safe sleep recommendations, including how they implemented them with their own families and how they implemented them with infants on their units. We asked open-ended questions to probe about facilitators and barriers to implementation of any practice change and then specifically asked about practice change related to safe infant sleep recommendations. A note taker was present at each focus group, and the study team debriefed at the end of each session.

The interviews were audio recorded and transcribed by a HIPAA-certified, independent, transcription service. A research associate skilled in qualitative methods reviewed all transcripts for accuracy. Each transcript was then reviewed line-by-line by at least two researchers: a physician (EC) and a qualitative researcher with a master's degree in psychology (PS). All authors, who work in various health care professions, were involved in review of the transcripts and the coding process. We chose researchers of varied background (triangulation of analysts) for credibility, as different opinions from researchers who analyze data can help inform and verify findings (Hanson et al., 2011).

We performed initial open coding with each transcript to identify concepts as they emerged. As recurrent codes were identified, a formal set of themes was developed. Using the constant comparative method of analysis associated with grounded theory (Charmaz, 2014), we then re-reviewed all transcripts with the set of themes that had been developed. Consensus was reached for any disagreements in coding and theme development. All data were entered into Atlas.ti for organizational purposes. Data collection ended when theoretical saturation was reached, meaning that no new themes were identified (Charmaz, 2014). After identifying themes, we applied the levels of Grol and Wensing (2004) to develop our final taxonomy. Each of the themes we identified aligned with the Grol and Wensing (2004) framework: *The Innovation Itself, The Individual Health Care Professional, The Patient, The Social Context, The Organizational Context*, and *The Economic and Political Context*. Triangulation, or use of multiple sources for verification of findings (Denzin & Lincoln, 2003), was achieved through peer review and feedback during presentations to staff at 16 birth hospitals and to pediatric and SIDS researchers.

Results

We conducted five focus groups with staff members for a total of 46 participants. All participant staff members were female and worked in hospital units caring for infants. Most worked in postpartum, maternity units *(n*=36), two in newborn intensive care, and the remaining participants worked on inpatient pediatric units (*n*=8). Participants self-identified as nurses *(n*=37), patient care associates (*n*=3), pediatricians (*n*=2), staff members in hospital custodial services (*n=2*) specifically on units caring for infants and their families, three identified themselves as patient care associates (PCAs), one identified herself as a lactation consultant, and one as the patient care educator for her unit. Although members of custodial services staff are not involved in direct patient care on the units, we invited them to join the focus group discussions about facilitators and barriers to following safe sleep recommendations since they often observed behavior of families related to infant care practices in the hospital rooms and could therefore add important insight.

Of the participants, 43 provided information about the number of years they were in their current line of work which ranged from 1 to 43 years with a mean of 16 years. More than half of the participants (n=26) reported that they worked more than 10 years in their current line of work. Participants described themselves as White (n=36), Black (n=7), Hispanic (n=1), Asian (n=1), or biracial (White/Asian; n=1). They reported their ages as between 20 and 30 years (n=7), between 31 and 40 (n=12), between 41 and 50 (n=13), between 51 and 60 (n=8), between 61 and 70 (n=5), and between 71 and 80 (n=1). Thus, more than half reported they were older than 41 years.

Consistent with the theoretical framework of Grol and Wensing (2004), facilitators and barriers important to consider for successful implementation of the AAP safe sleep recommendations in the clinical setting could be identified at the level of the *The Innovation Itself, The Individual Health Care Professional, The Patient, The Social Context, The Organizational Context*, and *The Economic and Political Context*.

Themes, which aligned with these levels, with exemplar quotes are discussed below.

CALLOUT 2

The Innovation Itself

Within this theme, participants described how they promoted the subthemes of credibility, feasibility, accessibility, and attractiveness of the AAP recommendations (*The Innovation Itself*) to families. They described their concerns about products marketed to families that contradicted safe sleep recommendations and made the recommendations less credible. Participants believed that families did not understand that items such as bumpers, wedges, and heavy blankets may not be safe. One participant said, “There is this difference between what is perceived by the family and what people get for shower gifts and what they are supposed to do [with the gift]. I think there is a conflict.”

Some participants also questioned the credibility of the recommendations related to safety; for example, several expressed concerns that supine sleeping might not be safe because infants could vomit and choke. Participants responded favorably when shown pictures of infant anatomy and learned that infants do not choke while in the supine position. They felt that the pictures would be useful to explain the concept to families and to improve credibility: “I was looking at the picture about how the trachea is anterior and it is like [obvious] looking at the picture…that is really a good way to say you are not going to choke. I love this picture.”

Participants also had concerns about the feasibility of following all recommendations. For example, some wanted to give pacifiers to newborns during the postpartum hospital stay, although this practice conflicted with recommendations from the World Health Organization (2017). One participant expressed her preference for pacifier use: “I feel like we give pacifiers a lot. But I think it’s a good thing, like I kind of don’t like it when they say ‘don’t give pacifiers.’” A number of participants expressed concerns about the accessibility of the message: whether families received consistent messaging and education about the

recommendations and whether this education occurred early enough to have an effect: “They need to start the education, the teaching, in the clinic or at their primary OB doctor.”

Finally, participants focused on whether the recommendations were attractive to families, specifically parents who preferred to share their beds with their infants. Some felt that a strong message about the risks of nonadherence and bad outcomes might increase adherence. Participants also mentioned that including true stories from real parents might be most effective:

I do not know if we could do something more impactful, like, that hits at home with them where they can watch a mandatory video before their discharge and, like, a heartfelt story of a mother, like a true story that happened …I know if I was a new mother and I watched that and I saw something tragic like that happened, that would impact me. And I would not want to make the same mistakes.

The Individual Health Care Professional

Within the theme of the *Individual Healthcare Professional*, participant ideas fell into the subthemes of awareness of, knowledge about, attitude towards, motivation to change, and how they integrated the safe sleep recommendations into their usual practice for providing education to families. Many participants knew about safe sleep recommendations but commented that guidelines changed over time, which was confusing and created a barrier to adherence: “I think that I have a lot of experience to draw from, although a lot has changed since I’ve had my kids, so you know, things continue to change.” While some participants worried about infants choking in the supine position, others did not: “Babies generally clear their airway if they were on their back whereas [they cannot do that] on their front, with no head control to lift up to move their head away.”

Attitudes among the participants varied, and although they generally supported the recommendations, some felt that they were difficult to implement. Several participants found the recommendation to not bed share contrary to recommendations for skin-to-skin contact between the newborn and mother:

I do find it challenging to balance the benefits of skin-to-skin, long term skin-to-skin, with safe sleep instruction. And what I could tell you from my experience in the facilities that they do the best at breast feeding, babies are asleep on their mother’s skin all the time. So I find that it’s extremely challenging and a balancing act.

Some participants felt less motivated to change based on their own experiences raising children, and several noted that infants tend to sleep well in the prone position:

I mean she would not sleep until we finally put her on her tummy, and [then] she slept great, and so I’m just kind of like [tell families] this is the best way to do it, but I know in the back of my head, it doesn’t always work.

Finally, in all focus groups, participants recounted times when they incorporated the safe sleep recommendations into patient education for families; they realized the importance of

modeling safe sleep practices: “They’re gonna remember what they saw, and they’re gonna copy us.”

The Patient

Participants described their views about how family members followed the AAP recommendations within the subthemes of family knowledge, attitudes and compliance. Many participants felt that some families had only limited knowledge; for example, they might know that infants should be placed supine, but they might be unaware of the dangers of bumpers or soft bedding in the sleep area: “A lot of parents know this stuff but still have questions about it…They know about back to sleep, but they don’t know about things in the crib, like the bumpers and the sleep positioners.”

Further, some participants noted that family members sometimes had negative attitudes, were dismissive of the recommendations, and were more worried about what the infant was going to wear, taking photographs, and making the sleep space look comfortable and welcoming with pillows and fluffy blankets: “I have to say the majority are not really interested in what is going with the baby except for putting big blankets on the baby and dressing the baby up and, you know, [taking] pictures of the baby.”

Many participants felt that families would ultimately do whatever they wanted, regardless of what staff showed them or taught them. They talked specifically about how culture was a very important factor in family decision-making and compliance:

They are going to do it at home anyway, especially when it is sleeping in a bed-type of situation because I honestly do think it is a cultural thing because a lot of my Spanish patients do it. I go in there and you tell them again like, “No,” and then you go in the next day and it is the same thing.

The Social Context

Participants commented on how their own social contexts affected their effectiveness in teaching safe sleep recommendations within the subthemes of opinions of colleagues and culture of their own network. Many participants commented on the importance of a consistent message from all colleagues, especially pediatricians, who might influence parent behavior: “We have pediatricians in the community that tell their parents to co-sleep. I know two.”

The participants were influenced by their own families and backgrounds and some commented that their own family members endorsed the AAP recommendations; others noted that in their cultures and families, the recommendations were not followed:

I come from [a community where] co-sleeping is a very accepted method and mostly because of…financial constraints. You do not have a bed for your children and you do not have a room, so five children will sleep in bed with their parents. So I come from that background.

The Organizational Context

Participants commented that the logistics of the hospital itself could present facilitators and barriers to properly teaching and modeling safe sleep recommendations within the subthemes of their own care practices, staff capacity, resources and staff education. Some participants felt that the use of a script to teach families about safe sleep would be beneficial: "There are like little scripts on our little badges that we could go through when we're doing our education piece when you get a new patient." Others felt that information about safe sleep was not consistently provided to families during all nursing shifts, especially night shifts. "I think day shift does [know more about safe sleep] because we do the discharges so we… know a lot more."

Participants noted that staff capacity to teach was limited, and they felt that with patient care, charting, and other tasks, it was difficult to find time for patient education:

I feel like if you're asking your staff to really go above and beyond to support things that are so important, then you have to take care of your staff, and you can't just keep heaping on them more and more and more and [expect them to] keep jumping higher, higher, higher.

Availability of resources was a common topic. Many participants felt that handouts and other materials would be useful for patients, but that these would cost more than the hospital was willing to spend. Expressing frustration about limited resources, one participant explained that a previously available booklet was no longer available after the price increased: "We have this book…I guess the hospital had to like reorder them, and the company upped their price, and so the hospital wasn't gonna pay for it."

Many participants commented on the variety of ways they were informed about changes to practice, including emails, safety huddles, and staff meetings. There was no consensus about which approach was the most effective. One participant noted that information about safe sleep could be discussed during huddles since this topic could be considered a safety issue: "Well, we are supposed to keep the safety huddle very brief and we are supposed to keep it just to safety concerns and I guess you could consider that a safety concern." Another participant discussed safety within the context of quality improvement using a Plan, Do, Study, Act (PDSA) approach:

It was formal to me, but we were all aware of it and then we presented it as a base[line] practice for quality and safety, and we did the presentation on it to [validate] what we did, and we did an analysis of practice before, during, and after [the PDSA cycle].

Finally, a few participants commented that units and hospital leaders could influence practice: "Maybe it has to come from the upper, the management, for them to actually take it seriously."

The Economic and Political Context

Participants discussed hospital and non-hospital decisions that affected safe sleep education for parents and providers within the subthemes of financial arrangements, regulations and protocols/policies. Several mentioned financial relationships with companies related to safe

infant sleep. For example, some companies have given sleep sacks to hospitals so staff can model safe sleep practices by placing the infant to sleep in a sleep sack which is safe and can decrease soft bedding needed in the crib. One participant noted that hospitals could use sleep sacks that they purchased from a manufacturer: “What about…HALO has those sleep sacks…This is one thing that I was going to bring up for the quality and safety…There are hospitals that actually provide sleep sacks to the infants to sleep in.”

Participants voiced concern about their understanding of a perceived conflict they noted between the requirements needed for Baby-Friendly designation and the AAP recommendations such as pacifier use: “Sometimes, it is hard for their moms because of all those Baby-Friendly initiatives.” Several participants mentioned the importance of testing knowledge about safe infant sleep recommendations on national board examinations to ensure that the message is widely spread: “I am speaking as a nurse, but the certification boards need to be involved to back up what has been done so that that information is being disseminated even wider as best practice for pediatric nursing.”

Finally, participants mentioned the importance of hospital protocols and widespread implementation by all staff. One participant suggested using a protocol as a teaching tool that required sign-off: “If we have new protocols or policies in place, we would have something written that people have to sign off that they read.”

CALLOUT 3

Discussion

We conducted this qualitative study to inform the design and implementation of a recently completed, successful, hospital-based, quality improvement intervention (Kellams et al., 2017; Moon et al., 2017) to improve infant caregiver adherence to the AAP safe sleep recommendations. Through this qualitative study, we identified facilitators and barriers at many levels: the individual level, the organizational level, and potentially the national level.

Although 24 years have passed since the AAP first recommended non-prone sleeping, many of our participants felt that that this innovation was not feasible or credible for themselves or for infant caregivers because of the perception that infants can choke while sleeping on their backs. Other researchers (Chung-Park, 2012; Gaydos et al., 2015; Raines, 2018; Zachry & Kitzmann, 2010) including ourselves (Moon et al., 2010; Oden, Joyner, Ajao, & Moon, 2010; Robida & Moon, 2012) found that mothers were much less likely to place their infants on the back to sleep when they were concerned about choking. As a way to overcome barriers to adherence to the AAP recommendations, several of our participants suggested that personal stories from families who lost infants to SIDS or SUID could be used to make a compelling case for adherence. We used information from this qualitative study to inform our intervention to change the way staff members modeled and taught safe sleep guidelines to parents. We created patient education materials that included information about choking, clear outlines of the AAP recommendations, and personal stories from real families who experienced infant death (Kellams et al., 2017). In this way we addressed the issues and suggestions raised in our focus groups.

Some of our participants found that ongoing updates to the recommendations were confusing to providers and families and were potential barriers to successful implementation, which was substantiated in a previous study (Colson et al., 2005). Participants spoke of the need for consistent messaging on all fronts, including family members and health care providers, as being critical to effectively deliver the safe sleep message. In a recent study on pediatricians' views about bed sharing, some found the practice to be safe, some found it to be unsafe and advised against it, and some allowed parental concerns to drive the content of patient education (Schaeffer & Asnes, 2018). In a previous study, we found that consistent messaging was strongly associated with adherence to safe sleep recommendations (Von Kohorn et al., 2010).

Importantly, participants made many suggestions about what could be done in their own organizations to most effectively communicate safe sleep messages. These included strategies to assure consistency of messaging through protocols, policies, and systematic approaches, such as staff emails and routine pre-shift huddles. Our results showed the importance of consistent messaging from multiple sources in order to change safe sleep behaviors among infant caregivers (Von Kohorn et al., 2010). Protocols for messaging of safe sleep recommendations throughout a hospital system is an important step to ensure consistent messaging for families (Rovell & Messer, 2012).

In a recent study, in which we used what we learned from these focus groups to design an intervention for postpartum units across the country, we found that it is possible to improve modeling and teaching of safe infant sleep recommendations through use of these methods. We provided toolkits to each participating hospital that included tailored resources: posters that listed the safe sleep recommendations; pocket sized illustrated cards for teaching at the bedside; and sample letters for hospital leadership, quality improvement officers, and health care providers (Kellams et al., 2017). Each hospital also used materials in the toolkit as part of PDSA cycles. For example, all hospitals used the posters, half of the hospitals modified their policies regarding safe sleep, and run charts demonstrated the success of the intervention. Across all hospitals, fewer than 60% of infants were placed in safe sleep environments (no objects) before the intervention compared with more than 90% after the intervention (Kellams et al., 2017).

Finally, participants noted the importance of economic and political forces at the national level and the effects that these can have on messaging. They noted the perceived conflict that can arise, for example, when encouraging skin-to-skin for successful breastfeeding while at the same time discouraging bed sharing. Several mentioned the role of accreditation agencies, such as national boards, in including knowledge of safe sleep recommendations as a critical competency for health care providers.

Limitations

While the trustworthiness and credibility of the data in this study were enhanced by using a research team to analyze data and triangulation to help validate the findings, qualitative studies have inherent limitations. Although the participants can provide a wide range of opinions, the findings cannot be used to define the prevalence of any one opinion. In addition, the participants lived in the eastern portion of the United States and worked in

two different health systems. Therefore, these results may not be generalizable to other parts of the country. However, our findings are largely consistent with other quantitative and qualitative studies on the attitudes parents and health care providers have about safe infant sleep practices. (Robida & Moon, 2012; Von Kohorn et al., 2010), which suggests that many of these perceptions are likely widespread.

Conclusion

Our participants, who worked on units that provided care for infants, described a wide range of facilitators and barriers to the successful implementation of the AAP recommendations for safe infant sleep. These facilitators and barriers ranged from issues related to the recommendations themselves to activities at the organizational and national levels. These findings are consistent with a known theoretical framework used for designing and implementing change in the health care setting (Grol & Wensing, 2004). We then used the themes identified in this study when we designed and implemented a successful quality improvement intervention to promote safe infant sleep in the inpatient hospital setting (Kellams et al., 2017). We believe this information will be useful to others when changing safe sleep practices of staff in their own inpatient settings.

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Author Bios

Eve Colson, MD, MHPE, is a professor in the Department of Pediatrics, St. Louis School of Medicine, Washington University, St. Louis, MO.

Paula Schaeffer, MA, is a research associate in the Department of Pediatrics, School of Medicine, Yale University, New Haven, CT.

Fern R. Hauck, MD, MS, is the Spencer P. Bass MD Twenty-First Century Professor in the Department of Family Medicine and a professor in the Department of Public Health Sciences, School of Medicine, University of Virginia, Charlottesville, VA.

Lauren Provini, MD, is a resident physician in the Department of Pediatrics, Children's Hospital of Philadelphia, Philadelphia, PA.

Mary McClain, RN, MS, is a consultant, Slone Epidemiology Center, Boston, MA.

Michael J. Corwin, MD, is an associate professor in the School of Medicine, Boston University, Boston, MA.

Emily E. Drake, PhD, is a professor in the Department of Family, Community and Mental Health Systems, School of Nursing, University of Virginia, Charlottesville, VA.

Ann L. Kellams, MD, is an associate professor in the Department of Pediatrics, School of Medicine, University of Virginia, Charlottesville, VA.

Nicole L. Geller, MPH,

Kawai Tanabe, MPH, is a research data analyst in the Department of Family Medicine, School of Medicine, University of Virginia, Charlottesville, VA.

Rachel Y. Moon, MD, is a professor in the Department of Pediatrics, School of Medicine, University of Virginia, Charlottesville, VA.

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Callouts

1. Hospital staff do not always teach and model the safe infant sleep recommendations from the American Academy of Pediatrics.
2. Facilitators and barriers to the implementation of safe sleep recommendations can occur at many organizational levels.
3. Our findings can be used to help design and implement an effective, hospital-based, quality improvement intervention to change practice.