RESEARCH ARTICLE

# Improving Communication Through Resident-Nurse Shadowing

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**A B S T R A C T**

**BACKGROUND:** Previously, reduced resident hours, multiple ways to communicate (text paging, calling), and fewer opportunities for face-to-face communication had led to increased frustration from residents and nurses in our institution about communicating and prioritizing patient care needs. It was thought that a shared understanding and improved teamwork and communication between residents and nurses might be achieved if the residents could watch the nurses' workflow and observe their care priorities.

**OBJECTIVES:** To understand the experience of residents and nurses who had participated in a novel 4-hour nurse shadowing experience conducted during the first year of pediatric medical residency in a children's hospital.

**METHODS:** We undertook a basic interpretive qualitative study by using semistructured interviews to formally evaluate the shadowing program by examining the experiences of both the first-year residents and the nurses being shadowed. Residents and nurses who had participated in the past 3 years were eligible for inclusion in the study.

**RESULTS:** Seven themes emerged that supported the overarching theme of improving communication between residents and nurses. Shadowing led to improved resident understanding and appreciation of nurses' work. Both residents and nurses experienced enhanced relationships as they discussed opportunities to improve care delivery. Residents reported practice changes after shadowing a nurse. Peer relationships formed among the dyads that extended beyond the shadowing experience.

**CONCLUSIONS:** Shadowing a nurse proved to be a valuable experience that had an impact on participants and potentially a positive impact on patient care.

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Communication breakdowns are the leading cause of unintended harm to patients.[1] Ineffective communication among interprofessional clinicians can cause failures in collaboration and teamwork and have resulted in medication errors, patient safety concerns, and sentinel events.[2] Although residents learn to be concise in their communication, nurses learn a broader narrative approach for communicating patient assessment findings.[3] Many nurses now use the I-PASS (Illness severity, Patient summary, Action items, Situation awareness and contingency planning, Synthesis) checklist for hand offs and the SBAR (Situation, Background, Assessment, and Recommendation) technique for communication. Although these tools are meant to keep communication concise, nurses may revert to narrative communication patterns learned in school. These differences in communication styles can lead to frustration among disciplines.[3] Despite being educated separately, nurses and physicians are required to work together efficiently in patient care.[4] In addition, collaborating across professions rather than in silos is also necessary to promote quality and safety.[4,5] The introduction of health information technology, such as computerized physician order entry, decreases opportunities for face-to-face interactions between residents and nurses.[6,7] The electronic health record also limits clinicians' view of the entire patient presentation and may prevent the team members from achieving a shared mental model.[8] Previously, reduced resident hours, multiple ways to communicate (text paging, calling), and fewer opportunities for face-to-face communication had led to increased frustration from residents and nurses about communicating and prioritizing patient care needs. It was believed that a shared understanding and improved teamwork and communication between residents and nurses might be accomplished if the residents could watch the nurses' workflow and observe their care priorities. Shadowing was implemented in our institution to address some of these challenges.

Shadowing opportunities for students and practicing professionals have been reported in the literature.[9–11] In past studies, shadowing allowed medical students to observe the work of nurses, including admissions, hand off, care planning and coordination, documentation, and providing care.[9] Shadowing clinicians in other disciplines also provides an informal learning opportunity to better understand their work and how they integrate into the health care team.[12] Observation of and discussion about clinicians' respective roles promotes interprofessional collaboration that impacts future clinical practice.[13] Medical students who shadowed a nurse applied concepts related to teamwork and communication.[14] They also experienced improved attitudes toward nurses, increased self-reported knowledge of the profession, and an enhanced ability to communicate with nurses.[10] As the largest professional group in clinical areas, nurses contribute to physicians' professional socialization and the development of their professional identity. Additionally, residents have learned skills from nurses, and nurses have identified physician errors that impacted patient safety.[15] Furthermore, it was presumed that a shadowing experience early in medical training creates a foundation for promoting interprofessional relationships between nurses and physicians.[10]

Despite positive results from medical student shadowing experiences, few studies of resident shadowing have been reported. In addition, earlier studies on shadowing have not included nurse interviews to understand their perceptions about being shadowed. The shadowing process could have an impact on both participants. In this article, we present the findings of a qualitative study exploring what residents and nurses learned from a shadowing experience.

## METHODS

A pilot shadowing program was initiated as a performance improvement activity in March 2011 with 9 first-year residents to familiarize them with the nurse's role in patient care. Resident learning objectives for the shadowing elective were to

appreciate the work of nurses, discuss patient care and communication challenges and strategies, and to practice skills (eg, administering medications, tracheostomy care). Residents did not receive learning objectives specific to rotating with a specific nurse, but directions were given to check in with the charge nurse to see which nurse they would be shadowing and to meet up with her or him after coming to the unit on the shadowing day. Residents shadowed a nurse for 4 hours between 8 AM and 12 PM. Given the opportunity to discuss their discipline-specific challenges, residents and nurses could identify strategies to improve communication. The pilot program received an overwhelmingly positive response from the initial participants. Shadowing a nurse was formally integrated into the resident curriculum in 2012. Each resident now shadows a nurse for a minimum of 4 hours during the float week in which residents select learning opportunities. Some residents may have shadowed for up to 8 hours. Interviews occurred in the fall of 2013 and data collection took place over a 14-month period from 2014 to 2015.

### Design

We undertook a basic interpretive qualitative study by using semistructured interviews to formally evaluate the shadowing program by examining the experiences of both the first-year residents and the nurses being shadowed.[16,17] This is a particular type of qualitative research aimed at understanding the experience of individuals. The hospital's institutional review board granted this study exempt status.

### Setting and Sample

The setting is a freestanding academic children's hospital in an urban setting. A 50-bed respiratory pediatric acute care unit was chosen because of the diverse patient population and the frequency that residents worked on this unit during their first year of residency.

All pediatric residents who completed the nurse shadowing program ($n = 68$) and nurses who were shadowed by a resident ($n = 21$) and were working on the intervention unit during the study period

were asked to participate in the study via an e-mail from the primary investigator. This was a purposive sampling strategy of all residents who had shadowed. Residents and nurses interested in participating were able to opt in (through a response to the principal investigator) or opt out (through a response to the study coordinator) through e-mail. If they opted in, they were contacted by the primary investigator to set up an interview time. Ultimately, 10 residents and 10 nurses were interviewed for the study. Interviews were stopped when information redundancy occurred, signaling that saturation was reached.[17] Participant demographics are presented in Table 1.

## Data Collection

Participants were given a copy of a study information sheet and the interview guide (Supplemental Materials) before the interview. The information sheet was reviewed again before the start of the interview. At the beginning of their interview, residents were asked to complete a checklist of tasks they had observed the nurse doing and what they learned about the nurse's role that they had not known previously. The purpose of this exercise was to allow the residents an opportunity to reflect on what they had learned. Interviews were conducted by 1 of the researchers using a structured interview guide. Because several of the nurses were shadowed more than once, nurses were asked to recount the most recent experience in their interview and briefly compare it with previous experiences with residents

shadowing them. The interviews were held in a private conference room, audiotaped, and transcribed verbatim by a professional transcriptionist. Actual names were replaced by participants' numbers, and any identifying information was removed in the transcript to protect participant confidentiality.

## Data Analysis

Member checks of the transcripts were conducted with 2 residents and 2 nurses who were study participants. Only grammatical and clarification changes were made. All members of the research team participated in data analysis, which took place over a 14-month period. A grounded theory approach was used to analyze the data, constantly comparing 1 U of data with another in search of emergent themes.[17] Data were analyzed by using methods and techniques suitable to the consideration of qualitative research: coding, categorizing, and theming.[18] The first and third authors coded 2 resident and 2 nurse interviews together and created the initial codebook. The first and second authors reviewed the remaining coded resident and nurse interviews, adding to the codebooks during the review process and confirming each other's coding. The resident and nurse codebooks were then compared, and similar codes renamed to match on each codebook. Codes were combined into categories, and main themes were identified. These themes were shared with 2 residents and 2 nurses from the study for

further member checking and were refined slightly on the basis of their feedback.

## RESULTS

Seven main themes were identified: 4 themes were shared between residents and nurses and 3 themes were unique to residents. The themes are summarized in Table 2.

### Theme 1: Understanding the Nursing Role (Residents and Nurses)

Residents and nurses both felt the shadowing experience created a unique opportunity to get to know more about the nursing role. One nurse shared, "I think it opens their eyes…because it's not just them taking care of the patients." A senior resident supported this, stating that he was unaware that "nurses did so much." Residents also learned that nurses complete hand offs and experience busy times just like they do. Besides their time together on rounds, residents were unaware of how nurses spent their time during the day and observed how nurses organized and prioritized care needs as patients' conditions changed and new orders appeared. Residents experienced the complex care nurses coordinated among health care team members and departments to complete procedures and treatments. Another resident (second year) shared, "It's a 2-way street, so it's not that we can educate nurses; I think they have a lot of education for us, especially as first-years."

### Theme 2: Identifying Workflow Challenges (Residents and Nurses)

Through discussion with nurses, residents learned about some of the barriers that prevent nurses from performing tasks in a timely manner. One example is when a medication is unavailable from the pharmacy. Residents had not given thought to the work done behind the scenes, but equated the work to some of the challenges they faced in their daily work. A senior resident stated, "Everybody has barriers in their own jobs to getting things done… you can see what you're being expected… what you as a nurse…how you are being pulled in different directions just as we're being pulled in different directions and how

**TABLE 1** Demographics of Residents and Nurses

| Group | Variable | | n |
|---|---|---|---|
| Residents | Year of residency at time of interview | First | 3 |
| | | Second | 3 |
| | | Third | 3 |
| | | Chief | 1 |
| Nurses | No. of times nurses were shadowed | 1 | 2 |
| | | 2 | 1 |
| | | 3 | 3 |
| | | 4 | 1 |
| | | 5+ | 3 |
| | Years of nursing experience[a] | 2 | 1 |
| | | 3.5 | 6 |
| | | 4 | 1 |
| | | 5 | 1 |
| | | 7 | 1 |

[a] Average years of experience of shadowed nurses = 3.9 y.

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**TABLE 2** Themes Identified From Interviews of Shadowing Program Participants

| Theme and Definition | Group | Quote |
|---|---|---|
| 1. Understanding the nursing role: a better grasp of the nurses' work was developed | Residents | Being able to…see other things [nurses] do with all their time. They have a lot of responsibilities (second year). |
| | | I think it's interesting to be in someone else's shoes. Being able to experience looking at the same patient from the other side of a computer or from the other side of the patient wall but with a really different perspective was nice (chief resident). |
| | Nurses | We're the primary bedside nurse so we…assess the patients, follow the orders, question orders for the doctors. It's a lot of critical thinking….It's a constant update to the doctor about the patient's condition. We're the eyes and ears. They [residents] may not be aware of…the little tasks that we have to do. |
| | | Our sign-outs are a little different than theirs are. They don't like to be interrupted during their sign-out, but neither do we. They focus on…medications and treatment and procedures, and we're [focused on] the "baby likes to be swaddled and fed"…[It's] just different types of care that we're giving. |
| 2. Identifying workflow challenges: nurses and residents identified issues that affect each other in patient care delivery | Residents | Some things that we order that are very easy for us to order…it's just typing 2 words in the computer and press order…actually take a lot of effort [for the nurse] to do (intern). |
| | | Things don't always happen on time, and now I understand why (second year). |
| | | Seeing how the [computer] screens differ:…there's been times on the phone that I'm like: "It is ordered that way! I can see it in the computer!" and… understanding that it is not always the same (senior resident). |
| | Nurses | He [resident] saw how a lot of times medications are given late because we're having issues with the pharmacy. |
| | | I think she [resident] realized that…the reason why sometimes we call a million times is because we're in the front end and that family is constantly calling us: "When's the doctor coming?" or "When's that paperwork going in?" |
| 3. Developing personal relationships: nurses and residents bonded with each other, resulting in enhanced interactions beyond the shadowing experience | Residents | Because it's another bond you can have with a nurse, and when you're in the trenches together,…especially when you're on night call…I feel like the nights are a totally different world than days…when a nurse calls you about something in the middle of the night, understanding that something you must be doing is important and they'll give you a little bit more time to respond back. I think having that perspective of each other's jobs is really nice and makes us all work together better (intern). |
| | | I built better relations with the nurses from the get-go, which helped when I was on other rotations later on in the year. In addition to patient care and patient safety, it also helped build a better relationship between resident and nurse (second year). |
| | Nurses | You form a bond with that person, and the people who shadowed me as first-years, who are seniors now, still remember that we shadowed, and we talk about it and joke around, so that part is really nice because it helps you build that rapport. |
| | | Now when I call certain residents I work with…it's so much more casual. I feel like we're on the same level; we're friends almost. I feel so comfortable that I can just call them and be like, "Hey, this is an issue that I'm having." It makes teamwork so much better when you get to know them. |
| 4. Feeling greater appreciation for their role and expertise: nurses experienced improved confidence, respect, and valuing of their work | Residents | I think that was the most helpful thing for me is just understanding what it is they're doing all day and there's plenty going on, but understanding how we can facilitate that and not really get in the way of it (second year). |
| | | Just having that sense of teaching and accomplishment and knowing that they [nurses] were passing on information and I think that…it builds a good relationship overall when you work with someone 1-on-1, it builds a long-term respect, but I think that any type of education that you offer to someone else I think you…leave at the end of the day feeling a little bit more accomplished and I think that was probably beneficial [to nurses] (senior resident). |
| | Nurses | They're more appreciative of the nurse's role. [The residents] have more confidence in what we ask of them. They usually don't question it. |
| | | They really understand how slow certain things might take. Everyone realizes something like: "Your phone rings a lot;…you're required to be at 2 rounds at once." There's "aha" moments with everyone. |
| | | The hierarchy is always…doctors and then nurses below them. and it was nice to be able to show around and teach [the resident]…how we do things and what it's like to be on the other end. It made me feel more confident because when you teach, it makes you feel better about what you're doing. |

**TABLE 2** Continued

| Theme and Definition | Group | Quote |
|---|---|---|
| 5. Gaining technical skills: residents developed competencies that enabled them to assist nurses and patients | Residents | I hate having to call a nurse because I can't figure out how to silence the IV machine and what is okay for me to touch versus what is not okay. [It was helpful] being able to manage some things without having to call and bother the nurse all the time when you're in the patient's room (intern). |
| | | Certainly, administering medications and feeds…how do you check and related to that the lines and drains and tubes that are related to that. So how do you check an IV and make sure that it looks safe, how do you clamp and unclamp a G-tube, how do you check for G-tube placement? Stuff like that that relates to meds and feeds I think in particular were the biggest skills that across the board are things that nurses do infinitely better than physicians and that frankly I think that physicians don't really have the opportunity to learn in many other settings other than this sort of an experience (chief resident). |
| 6. Transforming practice: residents experienced deliberate changes in their practice after the shadowing experience | Residents | Oftentimes we put in orders and then the nurse doesn't have time to…see the new orders. And I learned that just giving a heads up, a simple call, they really appreciate that so they know to get to it (intern). |
| | | I think definitely the tangible thing for me was understanding workflow and knowing when to communicate and how to communicate…and knowing who to call and when to call. I try to make more of an effort to not always use the phone because I feel like then if you talk face-to-face then you can realize when somebody is…really busy and struggling…especially around morning times when I know it's busy if I can catch someone and talk, it's a little bit better than just trying to call and know that they're already doing 15 things and maybe not focusing on what I'm trying to discuss…(second year). |
| 7. Spending time with patients: residents enjoyed having longer interaction with children and their families during the shadowing experience. | Residents | Having more time to really explain why we are doing certain things and what the end goal was, which sometimes we rush through (senior resident). |
| | | The daily goals are very succinct and straightforward when I explain things. I'll use the example of…discharge goals primarily that I think they [nurses] made very simplistic for the family to understand, which I don't think we always do as residents and I don't think we always do a good job of …during family-centered rounds (senior resident). |

we are pulling you in some of those directions." Similarly, residents were able to share the challenges they faced, such as being called or paged multiple times for routine issues during their protected teaching time. A significant challenge identified by both residents and nurses included differing views of the electronic health record screen. Both disciplines learned that the physician's view of a new order differed from the nurse's view of the order, which often created conflict, lack of a shared mental model, and delays in patient care.

## Theme 3: Developing Personal Relationships (Residents and Nurses)

Both residents and nurses reported having a more cordial and collegial relationship as a result of the time spent together during the shadowing experience. Residents and nurses appreciated getting to know each other on a first-name and more personal basis. Getting to know each other personally created a better work environment that was more open and friendly, leading to improved interactions and patient care. Residents and nurses maintained an enhanced relationship that transcended the shadowing experience. A senior resident stated, "…When I was an intern if we saw each other…upstairs or we had the same patient together, yes, it had more of a working familiar, friendly relationship…." A nurse stated, "Now there's more of a friendship that's been created through this process…you know some of them that have shadowed me their first year and now they're seniors and it's awesome because they're…running the show now and it's great to see them blossom and they're still cool with you…they're not above you or anything, so yes, I think it's a good relationship that it creates through shadowing."

## Theme 4: Feeling Greater Appreciation of Nurses' Role and Expertise (Residents and Nurses)

The shadowing experience led residents and nurses to acknowledge the reciprocal impact of learning from nurses. Residents gained an appreciation of the nurses' expertise and ability to learn from them. Furthermore, residents commented on how busy the nurses were and that they had no idea how complicated and time-consuming certain tasks were (eg, giving medications through a feeding tube). Nurses expressed confidence in their own knowledge and skills based on teaching interactions with residents. Nurses recognized and appreciated the lack of hands-on practice the residents get with bedside equipment and took opportunities to proactively review equipment and allow the resident time to practice. One nurse stated, "The residents that have shadowed me are very thankful for learning about equipment, especially oxygen equipment. They don't really know how to work it, how to read it, and how to hook trachs [tracheostomies] up to the oxygen." In addition, nurses appreciated the opportunity to demonstrate their expertise to the residents. A nurse stated, "It's very rewarding being able to teach them these things (eg, oxygen settings). If they don't

know…just teaching them and them appreciating what we know…because we think the doctors might know everything and they know so much about the diagnosis and the treatment but truly…at the bedside, they might not know a whole lot…"

## Theme 5: Gaining Technical Skills (Residents)

Residents developed competencies that enabled them to assist nurses and patients. These skills ranged from silencing a patient's monitor alarm to more involved skills like suctioning a tracheostomy and steps to troubleshooting a patient in respiratory distress with a tracheostomy. Learning these skills during shadowing empowered physicians to perform them independently without having to call a nurse for help. One resident recounted a night shift in which she was called to assess a patient with a tracheostomy in respiratory distress. A rapid response had been called, but she immediately changed the patient's tracheostomy, the patient improved, and no further intervention was required. She attributed this ability directly to the skills and troubleshooting she had learned from shadowing a nurse. Below is a list of specific skills residents learned from nurses during the shadowing experience:

- using and silencing a physiologic monitor;
- obtaining vital signs;
- performing tracheostomy care, including suctioning and emergency management;
- performing urinary catheterization;
- reading oxygen settings;
- setting up equipment;
- administering colonic washes;
- making a bed;
- changing a diaper;
- feeding an infant;
- managing feeding tubes, including insertion;
- managing central lines;
- administering medications (all routes), including programming intravenous pumps; and
- documenting from the nurse's perspective.

## Theme 6: Transforming Practice (Residents)

Residents experienced deliberate changes in their communication patterns with nurses, order writing, and expectations of nurses based on increased knowledge of nursing workflow. Examples included ordering medications 4 times a day instead of every 6 hours so the nurse did not have to wake a sleeping patient to administer a medication. Another resident double-checked orders before signing them to ensure they would be clear for the nurse implementing them. Thirdly, 1 resident reported checking in face-to-face with nurses every shift to discuss their shared patients and calling if unable to come in person. Several residents recalled witnessing the colonic wash procedure used for patients with chronic constipation. One resident (intern) shared how participating in a colonic wash enhanced their understanding of nurses related to the procedure: "…we did a colonic wash…you know people just throw things like that out on rounds 'Let's do a colonic wash,' but then for the nurse doing it, it's actually, like, a really time consuming, messy ordeal. So, first of all, I realized that you have to do it multiple times…it's very uncomfortable for the patient…and then from the perspective of the nurses, it's not usually effective at all." Residents reported considering other alternative therapies before ordering colonic washes. A nurse stated, "…to have a resident actually see the emotional toll it takes on these families, just so they understand when we're hesitant to start colonic washes…so they can see it's not just us as nursing…that it really is hard on the families." Another resident (intern) learned while shadowing that nurses wrote notes. "I, to be honest, had no idea that there were nursing progress notes that were written… and ever since I did that…I actually look at those now…it's a really efficient way to actually know what happened during a shift without having to track people down and spend additional time when someone has already documented it."

## Theme 7: Spending Time With Patients (Residents)

Several residents enjoyed having more time for patient interaction and patient and family education during the shadowing period. An intern stated, "…where I can make things run smoother, how my relationship with my nursing staff can make patient care better and can make a family's experience better and then having the right attitude all the time…getting to see the families…it just makes you be appreciative of what your job is and what a big role you get to play, even though you don't get to interact with your patients as much as you want to." During their first year, residents expressed dissatisfaction with a high patient load and an inability to spend the time they would like reviewing the plan of care or teaching patients and families. "In some ways it's sad, because as residents we're stuck in a room doing so much paperwork, and that's the last place we really want to be."

## Program Evaluation

Residents and nurses identified qualities that created a valued shadowing experience, or that both felt were important to do shadowing well. They indicated good shadowing leaders should have at least 2 years of experience, time management skills, patience, openness to the resident's perspective, and willingness to negotiate communication patterns. Nurses who were friendly and personable, collaborative, enjoyed teaching, and sought learning opportunities for the resident also made for a positive shadowing experience. Conversely, 2 of the residents interviewed had a negative experience with the same nurse who was not receptive and did not seem interested in improving physician-nurse relationships. This was a missed opportunity for reciprocal learning and appreciation of the nurse's role. After this was discovered in the interviews, the particular nurse was no longer selected for the shadowing program. During the interviews, these residents were offered an opportunity to shadow a different nurse.

## DISCUSSION

Findings of this study reveal that shadowing a nurse has proven to be a valued and memorable way to foster relationships between residents and nurses. The overall goal of the shadowing program was to improve resident-nurse teamwork and

communication after the increased reliance on technology to communicate led to the deterioration of interprofessional relationships. In response to the question, "If you were writing a news article about the shadowing experience, what would you title it?" several residents indicated "From the other side of the computer." Participants acknowledged that the differing resident and nurse electronic health screen views were a key factor leading to miscommunication. The differing views of the electronic health record from a resident and nursing perspective was an important discovery and could be a future area to explore.

The improved appreciation of the nurse's role and work activities identified in this study is consistent with previous studies conducted with medical students on shadowing.[9,10] Similar to the studies about medical students shadowing nurses, the residents interviewed in this study clearly articulated a greater respect and appreciation for the nurses' role in patient care through direct observation and participation in the nursing role. One difference between our study and the studies on medical students is that the residents will continue to work with the nurses for the remainder of their residency, whereas medical student interactions with the nurse(s) they shadowed are limited. Residents continuing to work with the nurses they shadowed may have a greater impact on nurse-physician relationships. In addition, beyond the enhanced teamwork previously reported between medical students and nurses, the shared themes led to a connection between the shadowing resident-nurse dyads that lasted through the 3 years of physician residency.

Moreover, residents learned technical skills from the nurse they shadowed and reported changes to their practice. The addition of such skills was not reported in findings of student-nurse shadowing; practice changes were not relevant at the time of student shadowing. These results support additional shadowing experiences at the resident level, even if the trainee had a shadowing experience when he or she was a student.

Previous studies did not elicit the nurses' perspective on what is learned in shadowing. The nurses felt appreciated and experienced increased self-confidence through teaching interactions with residents. These experiences further helped to improve physician-nurse relationships.

The shadowing experience also raises awareness of resident-nurse relationships. In our institution, the findings were used to incorporate an interprofessional simulation on phone triage into the shadowing day, in which the resident and nurses on the intervention unit discuss care priorities and communication techniques. Several study participants suggested reciprocal shadowing (with the nurse shadowing a resident) as a follow-up to this program. Nurses in the residency program recently began shadowing residents in the evening with a blogging capability for residents and nurses to dialogue after the experience. Ideally, that shadowing would allow nurses to gain a better understanding of the roles and responsibilities of the resident. Other recommendations were shadowing for a full shift and formally observing nursing hand off.

## Limitations

This study has limitations. The shadowing experience included a single 4-hour observation taking place in the morning, which limited the resident's ability to observe a nursing hand off, nurses' completion of orders, and busy afternoons filled with discharge teaching and preparation. Shadowing also occurred among residents and nurses on 1 inpatient acute care unit, which prevented the residents from working with a variety of nurses on other units with different patient populations. The shadowing experience, although part of the resident curriculum, was viewed as an informal learning event. This may have altered their ability to gain maximal benefit. Several levels of residents (interns to a chief resident) were interviewed for this study, which was months to years after the shadowing experience. Recall bias may have been a factor in the interviews. However, it was surprising that the chief resident interviewed remembered specific details about her shadowing experience and provided much more detail than some of the interns interviewed. The chief resident

stated, "I think there are skills that each of our roles have that are really important for the other to learn…how to administer a medication would be relevant and so I think she [nurse] tried to tailor as much as she could within the confines of what our patients'…needs were that day to make it relevant for me. So, I think that made it seem like a more lasting experience to the point that now 3 years later I can still remember some of these details." Additionally, residents may have had other positive or negative experiences in shadowing that were not captured here. This was a single institution study, but we have provided a thick, rich description of the study for the reader to determine the generalizability to their institution.

## Curricular Implications

A potential clinical implication is to include shadowing in every year of the residency curriculum, varying the unit, such that first-year residents shadow an acute care nurse, second-year residents shadow an ICU nurse, and senior residents shadow a charge nurse. The shadowing program could also be expanded to other disciplines, to other nursing units in the hospital, to ambulatory settings, and to clinicians in leadership roles.

Future research on shadowing could focus on measurement of improved communication patterns, the impact on both nurse satisfaction and patient satisfaction, and resident and nurse satisfaction with shadowing. One measure of parent and/or caregiver satisfaction is parental perception of how well staff worked together to care for their child. Shadowing and the relationships formed subsequently may positively impact clinician collaboration and patient care coordination. Indicators of nurse satisfaction include how comfortable nurses are speaking with residents, seeking patient-related advice from residents, and feeling appreciated by residents for their work, all of which could be improved through shadowing. Skills learned should be documented and formally assessed because they may inform the attainment of other residency requirements. Finally, changes in care delivery and patient outcomes should be assessed.

## CONCLUSIONS

Our 4-hour shadowing experience had a significant impact on individual resident-nurse relationships, providing a unique and meaningful opportunity for interprofessional relationships "beyond the computer screen," as participants noted. As with medical student-nurse shadowing experiences, appreciation for the nurses' role, responsibilities, and workflow were gained but at a deeper level that led to residents' practice changes, which may enhance resident and nurse workflow. Unique to this experience, residents related self-reported comfort with procedures typically done by nurses. Nurses, as teachers, experienced enhanced self-confidence and recognition of the value of their work. Given the additional benefits at the resident level, we strongly recommend that shadowing be included in all residency training programs and incorporated into hospital orientation.

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