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Workarounds in the Workplace
A Second Look

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Nursing workarounds have garnered increased attention over the past 15 years, corresponding with an increased focus on patient safety and evidence-based practice and a rise in the use of health information technologies (HITs). Workarounds have typically been viewed as deviations from best practice that put patients at risk for poor outcomes. However, this narrow view fails to take into consideration the multifactorial origins of workarounds. The authors explore the ways in which evidence-based protocols and HIT, designed to improve patient safety and quality, can have an unintended consequence of increasing the likelihood of nurses engaging in workarounds. The article also examines workarounds considering the ethical obligations of both nurses and administrative leaders to optimize patient safety and quality.

> Michael is a registered nurse with a baccalaureate degree who began working 3 years ago at a hospital that was part of a large health system. Last month, he was transferred to another hospital within the health system to take a job in a specialty ICU. The health system has an integrated, enterprise-wide health information system, so that all hospitals within the health system share the same basic electronic ordering, charting, and medication administration systems. In many ways, this made the transition easier, because he was familiar with the various technological applications. However, one problem he encountered was that he was unable to print laboratory specimen labels with his user-ID and password, although he was able to execute all the other functions like order entry, clinical charting, and medication administration. As a workaround, Michael has another nurse or his preceptor enter her user-ID and password to print out the labels. However, Michael expresses discomfort with this solution, because it is another nurse's name that is attached to the blood draw or specimen collection in the electronic record. Despite multiple calls to the IT help center, the problem remains unsolved. Michael would prefer not to use this workaround but is not sure what other options he has available at present.

The incident described earlier is commonly referred to as a workaround. A workaround is defined as an action that is performed by an individual to circumvent a block in workflow and thereby achieve a desired goal; yet, the action deviates from the protocol established by the organization (Debono et al., 2013). While these behaviors are observed across the spectrum of professions and workplace environments, this article focuses on issues that occur because of workarounds performed by nurses in the course of patient care. Published work chiefly portrays nursing workarounds as negative behaviors and examples of poor nursing practice that need to be eliminated, as they increase the risk for poor patient outcomes. Healthcare providers who engage in workarounds are described as "noncompliant" and "risking patient safety" (Debono et al., 2013). However, these characterizations fail to consider that workarounds are frequently undertaken to ensure patient safety and well-being and provide efficient care, as demonstrated in Michael's case. To view all workarounds as inappropriate is an oversimplification of the phenomenon; casting those who engage in them in a negative light is ethically problematic. Because there is an increased focus on nursing workarounds in clinical practice, a more nuanced exploration of this topic is needed.

Workarounds have existed throughout modern nursing but have gained more attention in the last 5 years. An example of an early, low-tech workaround is the "homemade" warm compress composed of hot towels wrapped and taped in an underbed pad that was used temporarily while waiting for the K-pad unit to arrive from central supply. Since that time, the use of workarounds has expanded to meet the needs of a complex, changing clinical environment. Debono et al. (2013) undertook a scoping review of the published literature on nursing workarounds in the fields of nursing, healthcare, safety science, and sociology. Although only 251 articles on the topic were published in the years 1961 to 1999 (about seven per year), there were 517 articles on workarounds published between 2008 and 2012, corresponding to a rate of about 130 per year. What factors led to

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The authors and planners have disclosed that there are no conflicts of interest, financial or otherwise.

DOI: 10.1097/NOR.0000000000000161

this exponential increase in interest? This heightened interest is possibly the result of multiple forces in the social, technological, and healthcare environments. Exploring these simultaneous and pivotal changes that have had an impact on the care delivery environment will aid in better understanding nursing workarounds and their ethical implications.

Patient Safety and Evidence-Based Practice

The increased interest in nursing workarounds is closely related to the rise of the patient safely and quality "movement" and the advent of evidence-based practice (EBP) standards. Monitoring of patient outcomes in the 1990s revealed that many patient injuries and deaths were preventable. Perhaps the most widely recognized call for action was the 1999 Institute of Medicine (IOM, 2000) report, *To Err Is Human: Building a Safer Health System* (2000). Although early work in the field of quality improvement focused on increasing the knowledge and critical thinking skills of the individual clinician to reduce the number of unintentional errors, the IOM report recognized the role of system-level factors. This report called for systems-level interventions to reduce unintentional errors and poor clinical practice and thereby improve patient outcomes.

Simultaneously the body of nursing knowledge continued to expand and technological tools for rapid information dissemination became widely available. The available data on a clinical topic could be gathered, analyzed, and synthesized to determine which interventions resulted in the best patient outcomes. This technological capability, combined with the motivation to utilize research to improve patient outcomes, led to the development of the EBP model (Melnyk & Fineout-Overholt, 2005). Once a "best practice" was identified, it was operationalized in a protocol that was implemented across a practice environment. Evidence-based protocols were seen as the ideal vehicles with which to standardize practice and address the patient safety and quality concerns at the systems level. Subsequently, evidence-based protocols were widely disseminated across practice environments *and* the principles of evidence-based healthcare as a model for practice began to be integrated into clinical education curricula. These principles included the importance of basing clinical practice on available research findings, learning how to locate and critically appraise research, and the need to systematically evaluate the effects of practice change on patient outcomes (Melnyk & Fineout-Overholt, 2005).

Rise of Health Information Technology and Healthcare Informatics

The rapid proliferation of health information technology (HIT) and the increased availability of searchable electronic databases made it possible for nurse researchers, clinical nurse specialists, and clinical workgroups to gather, synthesize, and translate large volumes of research into EBP protocols. In addition, the application of technology in healthcare gained momentum and expanded into the clinical care dimension. Highly error-prone clinical care tasks, such as the ordering, dispensing, and administration of medications, were obvious targets for systems-level applications of technological solutions. The result was the development of large integrated systems, including computerized provider order entry (CPOE), automated medication dispensing, electronic medication administration records, and barcode medication administration (BCMA) applications. Similar systems for laboratory specimens were implemented, with CPOE and automated label printing, specimen processing, and results posting.

Once these systems were in place, they were expected to eliminate (or nearly eliminate) the possibility of medication errors. Computerized provider order entry offers real-time alerts to the provider, signaling an allergy, duplicate order, drug–drug interaction, or an out-of-range dose (Classen, Avery, & Bates, 2007). Computerized provider order entry also puts to rest the perennial problem of interpreting illegible orders. Electronic pharmacist verification and automated dispensing further ensure that the correct medication, dosage, and form are delivered to the nurse. Barcode medication administration theoretically closes the loop by ensuring that the 5-Rights of medication administration are achieved. However, many clinicians report that they have just traded one set of problems (risk for human error) for another (burden of inefficient and unreliable technology). In fact, a recent study by Westphal, Lancaster, and Park (2014) revealed that along with infection control activities, medication administration tasks were the clinical activities most commonly associated with workarounds.

Problems of Complexity and Technology

Protocols coupled with technology-based systems such as BCMA or CPOE were designed to embed the elements of best practice into workflow and are now the dominant model in promoting healthcare quality. This approach to improving patient safety and quality, however, has several limitations. For example, these protocols fail to consider the full definition of EBP, often do not address the workflow issues that are commonly at the root of quality issues, and assume that technological applications are reliable and easily integrated into the clinical environment.

Evidence-based practice, by definition, incorporates individual patient values and preferences (Melnyk & Fineout-Overholt, 2005). If the protocols or technology-based systems do not permit the tailoring of practice to accommodate these preferences, the nurse devises a workaround to achieve patient-centered care. One example of this is standard medication administration times. When the physician enters an order for a medication, it is automatically scheduled for a specific time. The times may be completely arbitrary, but this practice allows for efficient automated dispensing and is based on recommendations from pharmacy and HIT governing bodies (Vermeulen et al., 2007). If the patient prefers to take the medication at a different time (and there is no clinical contraindication for it), the nurse has to

attempt to have the medication rescheduled or engage in a workaround. Such a workaround might be charting that the medication was given, but then giving it at a later time. If the system were designed with the flexibility to support reasonable variations of a clinical process, the need to resort to a workaround would be lessened.

Second, the implementation of technology-based systems alone cannot overcome the workflow issues inherent in complex care environments. If systems merely automate inefficient, error-prone processes, the results *even with seamless technology* will not overcome the root causes of error and poor quality. Rather, workarounds will be necessary. For example, consider the challenge of providing discharge medication instructions to outpatient surgery patients. These patients are referred by their primary care providers (PCPs) to specialists for evaluation and possible surgical intervention. If surgery is recommended and chosen, the patient is admitted under the care of the surgeon and discharged by the surgeon, who must provide detailed discharge instructions, including instructions regarding medications. If a medication was stopped prior to surgery, the surgeon has to give detailed instructions about restarting it. If a new medication is needed, the surgeon has to prescribe it, ensuring that it is compatible with the other medications the patient already takes. Without the coordinated expertise of both the PCP and the surgeon, the process is highly error-prone. Merely automating an error prone process (i.e., providing customized printed discharge instructions instead of hand-written ones) will not overcome the problem. Workarounds such as instructing the patient to "follow up with the PCP regarding medications" or "resume pre-op medications" abound. A new and better process, one that includes a mechanism for obtaining input from both the PCP and the surgeon is needed, especially for patients with complex medication regimens. Health information technology experts point out that the transition to a new technology presents organizations with the ideal opportunity to evaluate current state workflow and design a better, safer future state workflow, leveraging the new technology for optimal benefit.

The last limitation, the reliability of technological systems, is perhaps the most problematic. With fully automated *and* integrated systems that incorporate technology in all aspects of a process (e.g., medication ordering, dispensing, and administration; or laboratory test ordering, specimen collection, and reporting results), there are multiple points in the process where breakdowns can occur. For example, if a laboratory test is ordered, a specimen label with patient identification and order information is printed on the nursing unit. However, if the printer is out of labels or it jams, no label is generated. The nurse knows that the laboratory test is ordered but does not have a label. Depending upon the robustness (built in flexibility and redundancy) of the system, the nurse may be able to reload or fix the printer and then reprint the label. However, if this is not the case, the nurse considers a workaround. Another possibility may be to reenter the order and generate a new label, but then the old order will need to be cancelled, especially if the billing system is tied to the ordering system. This action is termed "rework" and entails considerable nursing time (Halbesleben, Savage, Wakefield, & Wakefield, 2010). Alternatively, the nurse may choose to affix a generic label, with the patient name and identifiers, but this alternative has implications too; in automated laboratory systems, that specimen will need to be manually processed. Clearly, increased automation and integration demand increasingly high levels of technological reliability or workarounds are inevitable!

Proponents of the technology may say, "Well, at least patient safety was maintained—and that's the most important thing." But poor technological reliability and a lack of robust systems come with a cost, specifically, the impact on staff morale and sense of professionalism. Furthermore, in instances such as the one described previously, there is the need to consider the tasks that the nurse was unable to complete while he was fixing the label printer. A qualitative study by Westphal et al. (2014) of workarounds observed by 4th-year nursing students showed time pressures to be a major force behind engagement in workarounds. A survey by Rack and colleagues on BCMA workarounds revealed that greater than half of nurses polled stated they had encountered *at least one situation in their last shift worked*, where they were unable to scan either the medication barcode or the patient wristband per the BCMA protocol (Rack, Dudjak, & Wolf, 2012). These incidents represent situations where nurses faced difficulties using the system as designed. For nurses already experiencing time pressures, such situations often lead to frustration and even greater use of workarounds (Halbesleben et al., 2010; Institute for Safe Medication Practice, 2014; Rathert, Williams, Lawrence, & Halbesleben, 2012). Consider the following:

> Nurses describe the intense scrutiny around BCMA scanning reports. Typically reports are generated daily, and nurses whose scanning percentages fall below the threshold are subject to progressive disciplinary action. One nurse described how medication package barcodes often became wet, and would not scan. To avoid manually entering that the medication was given (as opposed to scanning it), the nurse would look to see if another dose of the medication was present in the patient drawer. If so, she would scan the intact medication package, but give the medication from the damaged package (which may or may not have been the correct medication or dose, as there was no electronic means of verification).

This is an excellent example of a system without the necessary redundancy to compensate for a frequent technological failure, and short of going to the pharmacy to obtain a replacement pill, the nurse has few options. On the contrary, consider an example of a system that was robust to common technological failure.

> The nursing units used bedside glucometers which had scanning functionality. When performing a blood glucose reading, the clinician scanned the barcode on the patient wristband, performed the test, and the results were automatically posted to the patient's electronic record once the glucometer was returned to its docking station. When performing blood glucose

testing, clinicians frequently encountered difficulties when scanning patient wristbands. However, in the event of barcode scanning failure, the clinician had the option to manually enter the patient's ID number twice (as a double check) and proceed with testing.

Although manual entry was more time consuming than scanning, it did not require the clinician to leave the patient bedside, workflow was not significantly impeded, *and* patient safety was maintained. As seen in the first example, when systems do not have the necessary capacity to compensate for common failures, and leadership treats deviations as "violations," the result is the perpetuation of workarounds. Workarounds were used to keep scanning compliance high, but actual patient safety was not enhanced.

Beyond the contribution to nurses' frustration and feelings of time pressure, situations that lead to workarounds may possibly contribute to moral distress. Moral distress, a concept first described by Jameton (1984), refers to the experience of stress resulting from the inability to act in a manner consistent with one's beliefs, due to institutional constraints. The definition was later broadened to include stress symptoms resulting from situations where the healthcare provider feels "he or she is not able to preserve all interests and values at stake" (Kälvemark, Höglund, Hansson, Westerholm, & Arnetz, 2004). This definition captures eloquently the situation of the nurse who is deliberating whether to employ a workaround to expedite care.

Musto et al. (2015) cite that the increased emphasis on cost-effectiveness and efficiency in healthcare has heightened the tension between corporate and professional values, and thereby increased the likelihood for moral distress among healthcare providers. While some readers might think the idea of moral distress an overreaction, it is important to consider both the potential impact of the workarounds used and the frequency with which they are employed. While individual workarounds may not represent serious ethical dilemmas, they occur with such frequency (Rack et al., 2012; Westphal et al., 2014) that to ignore their repeated impact is ethically questionable (Jameton, 1984). Research on the concept of moral distress has demonstrated a relationship between moral distress, the practice environment, and quality and safety initiatives (Pauly et al., 2012). Moreover, increased levels of moral distress have been associated with nurse burnout and workforce attrition. It is vital that institutions consider the degree to which inflexible protocols and technological systems can potentially lead to moral distress among nurses.

Evidence-based practice has great potential to identify the most effective care, and technological applications can improve the safety and quality of care delivery, but these tools need to be thoughtfully implemented to avoid creating rigid and inefficient systems that invite the use of workarounds and potentially lead to moral distress. Given the often imperfect state of healthcare systems and the prevalence of workarounds, what are the ethical and legal obligations of the parties involved?

Examining Workarounds From Social, Legal, and Ethical Perspectives

When considering the ethical implications of nurse workarounds, there is a temptation to think about them only from the perspective of the nurse and the nurse's obligation legally and ethically to follow prescribed protocols and uphold the interests of the patient. Yet, it is important (and illuminating) to also consider the ethical obligations of healthcare organizations. First, considering the motivations of heath care organizations to adopt EBP protocols and the technological applications in which they are embedded may be helpful. From a legal perspective, healthcare agencies have an incentive to institute technologies to safeguard patient safety. If an adverse event occurs and legal action is taken, the institution can argue that it had taken reasonable precautions to combat that type of error.

Second, there are commercial incentives to implementing such technologies. Organizations such as The Leapfrog Group, a coalition of healthcare purchasers dedicated to improving patient safety (The Leapfrog Group, 2014), score institutions on a set of quality measures (including CPOE implementation) and publish these scores on their website. Organizations and corporations looking to purchase group insurance for their employees use tools like the Leapfrog website to view different hospitals' scores on safety and quality measures when selecting a healthcare plan. In a market where institutions compete for customers (individual, organizational, and corporate), endorsement by such an organization such as Leapfrog can offer a competitive advantage.

In addition, there are financial incentives to implementing technological systems designed to improve patient safety. The Centers for Medicare & Medicaid Services has developed an EHR Incentives Program, which offers healthcare institutions financial compensation if they "adopt, implement, upgrade or demonstrate meaningful use of certified EHR technology" (Health IT.gov, 2014). However, this program is only currently funded through 2016, so there is pressure for healthcare institutions to meet the objectives within that timeframe to achieve maximum compensation. Because some meaningful use objectives are not easily inserted into current clinical workflow, institutions may offload EHR tasks to the clinician group that is easiest to engage. For example, nurses may be asked to complete the cause of death in the EHR, although they may not be the most appropriate healthcare providers for the task. Ironically, this type of action is itself a workaround used by institutions to meet requirements, without actually achieving the purpose of the required objective. Like the scenario with outpatient surgery discharge medication instructions, the example highlights the lack of an underlying process; the tension caused by competing institutional and professional values has the potential to contribute to moral distress among nurses.

Beyond federal financial incentives, HIT vendors also advertise that, along with safety and quality benefits, applications such as CPOE have been shown to decrease

costs (Classen et al., 2007). Furthermore, individual insurance providers may institute pay-for-performance programs to encourage adoption of certain technological applications.

Finally, there are strong social pressures to adopt technological applications; consumers and healthcare providers alike have come to expect the increased use of technology in healthcare and typically equate it with progress and improvement (Hofmann, 2002; Storch, 2005). However, technology alone does not constitute improvement; it must be thoughtfully situated and applied within the larger context of care delivery. Storch (2005) has challenged healthcare professionals to avoid automatically equating technology and efficiency with improved safety.

Taken together, these incentives illustrate powerful reasons for healthcare organizations to implement technological systems intended to enhance patient safety and quality and yet constitute a significant conflict of interest. It is easy to see how an organization's administration might push the implementation of a given technology forward to reap certain benefits, without thorough planning and comprehensive testing. This can result in undue burden on the nursing staff and decreased time spent in direct patient care *without the desired gains in patient safety.* The ideal model for implementation of HIT includes engagement by the organization's administrative and clinical leadership in articulating the future state vision for technology and ongoing involvement of both in the design, implementation, and support of the system. If the organization's administration is not committed to providing ongoing resources to address technological failures, workarounds that can undermine patient safety and staff morale will ensue.

An institution's leaders are ethically obligated, just as individual healthcare providers, to consider the intentions of their actions—is a protocol or application being adopted because the leadership truly believes it will improve patient safety or because it will yield other gains? Have leaders done due diligence by fully assessing and preparing for the proposed change? In addition to considering their intentions, organizational leaders are also obligated to minimize the possibility of moral distress; this is best achieved with a well-planned strategy. Experts in HIT implementation (D. Sutton, personal communication, September 18, 2014) emphasize that successful deployment includes all interested parties, in all phases of the project. Thus, clinical end-users, leadership, and administrators are all engaged in design, testing, training, as well as ongoing monitoring and support. Monitoring for adoption and compliance is important and will be most effective if it can discriminate between true problems with compliance and technological failures or clinically supported deviations from standard use.

The role of high-quality training cannot be overemphasized. It is especially important to provide detailed teaching that clearly outlines how correct use of a given technology supports safe practice. Organizations may be tempted to think that "tech savvy" users will require minimal training; however, it is critical that they are instructed in the process that was developed for the task. Implementation of HIT often affords institutions the opportunity to optimize workflow and create better, more efficient processes using the new technology. But if end-users are not taught both the new process *and* the technology that supports it, they are likely to be frustrated and attempt to use workarounds. This concept is not new—recall the questions encountered when institutions adopt new chest-drainage systems, "Where do I put in the water?" A multidisciplinary, multilevel team approach that fully integrates the people, processes, and technology for a given component of care delivery can anticipate potential workarounds *before* deployment and thereby prevent future situations that lead to workarounds.

Ethically Informed Problem Solving

Clearly workarounds are multifactorial and are the result of complex work environments and highly variable patient situations. Recognizing that workarounds potentially impact both patients and the nurses who care for them is important. Obviously, prevention is the best strategy to preempting the need for staff to engage in workarounds. But beyond prevention, perhaps the best approach to evaluating workarounds is to consider the precipitating factors (Clarke, Lerner, & Marella, 2007) and commit the necessary resources to ensure successful work redesign. For hospitals, this may entail having a nursing informatics (or clinical informatics) staff liaison who is available to come to the nursing unit to troubleshoot problems. This individual, if unable to solve the problem, can serve as a liaison to the IT staff and triage problems based on their relative safety/quality impact. Michael, the nurse described in the opening vignette, could definitely have benefitted from a resource such as this. For non-HIT-related problems, such as the outpatient discharge instructions, an interdisciplinary team approach is likely needed. In fact, solutions that incorporate multiple levels of staff and administration have been found to be most effective in reducing moral distress and are vitally important in care environments with recurring waves of organizational change (Musto et al., 2015).

Halbesleben et al. (2010) argue that workarounds can be positive and creative; evaluating them in an unbiased fashion may inform more efficient and safe processes. If administrators view workarounds as opportunities to explore the limitations of the system and engage with nurses to better understand root causes, multiple benefits can result. For example, the leaders might consider creating a quality improvement teams that collect data on workarounds and use prevalent workarounds as opportunities to identify and reengineer inefficient or risk-prone processes.

Regardless, an institution's leadership should consider viewing nursing workarounds in light of the multiple contributory factors that underlie them. True patient safety will be enhanced, nurse frustration levels will decrease, and nurses will be more likely to embrace future system and technology changes, believing that the leadership is committed to instituting working solutions to safety and quality challenges.

Acknowledgment

The authors thank Darinda Sutton, MSN, RN-BC, for her thoughtful review of the manuscript and input on best practices for the implementation of HIT.

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