

# Challenges in Defining and Categorizing Falls on Diverse Unit Types

## Lessons from Expansion of the NDNQI Falls Indicator

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In 2012, the National Database of Nursing Quality Indicators launched a project to expand its falls indicator for use on pediatric, neonatal, and psychiatric units. We discuss challenges encountered, argue that schemes for categorizing falls by cause or supposed preventability are not suitable for large-scale efforts to track and prevent falls, express concern about the growing burden of collecting increasingly granular quality data, and discuss limitations of total and injurious fall rates as quality measures. **Key words:** *accidental falls, health care benchmarking, health care quality, NDNQI, patient safety*

**T**HE NATIONAL Database of Nursing Quality Indicators (NDNQI) is the nation's largest repository of data related to the quality of hospital nursing care. Launched by the American Nurses Association, the NDNQI

has grown from 23 member hospitals in 1999 to 2000 in 2014. Since 2001, the program has been managed at the University of Kansas Medical Center. NDNQI member hospitals submit nursing unit-level data according to specifications in the NDNQI Data Collection Guidelines, which are written to ensure uniform data collection and reporting. NDNQI analysts conduct rigorous screening of data submitted by hospitals and work to correct or delete erroneous data. After data are cleaned and analyzed, the NDNQI provides detailed performance reports to hospitals, including data for benchmarking and tracking unit and hospital performance over time.

Falls are a serious problem in hospitals,<sup>1-4</sup> and the NDNQI has collected falls data from adult critical care, step-down, medical, surgical, and medical-surgical units since its inception and from adult rehabilitation units since 2003. The NDNQI falls indicator (an umbrella term used to refer to the various fall-related data elements collected by the NDNQI and the associated performance measures reported to hospitals) includes 2 measures endorsed by the National Quality Forum: the rate of total falls per 1000 patient-days and the

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rate of injurious falls per 1000 patient-days. It also includes a number of data elements for characterizing individual falls and patients who fall.

In 2012, the NDNQI formed a team of University of Kansas Medical Center personnel to revise and expand its falls indicator. The 2 goals of the expansion project were to make the falls indicator suitable for a wider variety of nursing unit types, including those serving pediatric, neonatal, and psychiatric populations, and to introduce additional categories of falls. The NDNQI had categorized falls based on (1) whether or not the fall was assisted by hospital staff, and (2) the outcome of the fall in terms of injury (none, minor, moderate, major, or death). The plan was to create additional categories to accommodate types of falls occurring on new unit types (eg, developmental falls on pediatric units) and other new categories (eg, physiological falls) to allow for a fine-grained categorization of falls across unit types. The project team's decisions in expanding the indicator were constrained by NDNQI concerns that all definitions allow for collection of reliable data and that continuity be maintained in time trends for the total and injurious fall rates.

The purpose of this article was to provide a detailed discussion of the challenges and decisions involved in expanding the NDNQI falls indicator. As part of this discussion, we argue that schemes for categorizing falls by cause, although they may be helpful in specific situations (eg, postfall analysis for risk management purposes), are not beneficial in large-scale quality improvement efforts to track and prevent inpatient falls and we offer recommendations for more useful measures of fall-related quality of care.

## **DEFINING FALLS**

### **“Intentional falls”**

One of the first challenges we faced was how to deal with the so-called “intentional fall,” in which a patient intentionally descends to the floor. This could include cases in which

a patient drops or throws himself or herself to the floor in the presence of hospital staff as a way of acting out, as well as cases in which the patient falsely claims to have fallen for some reason (eg, to get attention). These events are known to occur on psychiatric units, and NDNQI hospitals also have reported their occurrence on adult general care units (medical, surgical, medical-surgical). The NDNQI wanted to track these events in response to demand from member hospitals and doing so was especially important with the expansion of the falls indicator to psychiatric units. The problem was defining these events in a manner consistent with the NDNQI fall definition, and in such a way as to minimize subjectivity in reporting.

We put the term “intentional falls” in quotes because such events are not falls by most definitions that we are aware of, as these definitions typically include a word such as “inadvertently” or “unintended.”<sup>5-8</sup> Prior to the expansion, the NDNQI defined a fall as “an unplanned descent to the floor with or without injury to the patient.”<sup>9</sup> This definition was unclear as to whether the descent must be unplanned either from the perspective of the patient or from the perspective of the hospital staff to qualify as a fall. For example, an intentional descent to the floor planned by the patient would be unplanned from the perspective of the hospital staff, so it might or might not be counted as a fall, depending on one's interpretation of “unplanned.” We used the expansion as an opportunity to revise the definition, replacing “an unplanned descent” with “a sudden, unintentional descent” so as to exclude intentional descents altogether. Other changes to the definition are discussed in the following text.

With intentional descents clearly excluded from the definition of falls, there remained the problem of naming, defining, and categorizing these events. It would be incorrect to call these “falls,” and we ruled out including them in counts of total or injury falls, in part, because this would disrupt years of continuity in the tracking of units' total and injury fall rates. We decided to use the term “intentional

fall events” and to define these events as occurring “when a patient aged 5 years or older falls on purpose or falsely claims to have fallen.” It was important to exclude intentional descents by patients younger than 5 years so that pediatric units would not be burdened with reporting every collapse to the floor by a toddler during a tantrum. Consistent with the NDNQI fall definition, we decided to count suspected intentional fall events separately from (rather than as a subcategory of) all other falls.

The NDNQI relies on the judgment of the nursing staff to distinguish between true falls and intentional descents. According to the revised guidelines, “When the nursing staff has reason to suspect that a reported fall is an intentional fall event, it should be reported to NDNQI as such.” There is a degree of subjectivity in assessing another person’s intentions or truthfulness, and this may limit the reliability of this measure relative to the reliability of more objective measures. However, the exercise of subjective judgment is unavoidable, given the nature of these events.

One concern with the introduction of suspected intentional fall events was that hospitals would use this new category to lower their reported total fall rates by miscategorizing true falls as suspected intentional fall events. We understand concerns about “gaming the system” and underreporting of adverse events, but we would note that the incentives for such behavior for NDNQI member hospitals are limited. Hospitals participate voluntarily, and their data are confidential; the NDNQI does not participate in public reporting. Of course, there may be pressure in some hospitals for unit managers or nursing executives to perform well in benchmarking against peers, especially in hospitals that have taken on the substantial financial commitment required to pursue Magnet designation. In any case, the risk of intentional underreporting of adverse events is not unique to falls.<sup>10</sup>

### **Pediatric falls**

From a falls-tracking perspective, the pediatric population is unique for several reasons.

For one, very young children may be learning to stand or walk, and falling is a natural part of this developmental process. To deal with falls of this sort, we created a category for developmental falls, defined as events “in which an infant, toddler, or preschooler who is learning to stand, walk, run, or pivot falls as part of the developmental process of acquiring these skills.”

Asking hospitals to report every developmental fall would be pointless from a quality measurement perspective and substantially increase hospitals’ data collection burden. However, there are cases in which a developmental fall would be reflective of quality of care. For example, if a child with hemophilia falls while learning to run and sustains a laceration, this would be a serious adverse event of the sort that should not occur in a hospital. Thus, it seems that some, but not all, developmental falls should be reported. We decided to have hospitals report only developmental falls resulting in injury. Children are not typically injured in developmental falls, and an injurious developmental fall may be indicative of a safety issue (eg, inadequate adult supervision or environmental hazards making the setting unsuitable for a toddler to practice walking).

Pediatric settings are also unique in that children are more likely than adults to climb furniture, jump on beds, and engage in rough-and-tumble play, and children can be dropped while being held or carried by a caregiver (a topic addressed in the next section). In other words, children may fall in more diverse ways than adults.

To accommodate a wider variety of falls, we revised the NDNQI fall definition to allow for descents in which the patient does not land on the floor. This was motivated not only by the expansion to pediatric units, where a patient jumping on a bed might land on the bed rail and sustain an injury, but also by the need for a more flexible definition across unit types. Prior to the expansion, the definition included any “unplanned descent to the floor,” along with instructions to include as a fall events in which a patient “lands on surface where you would not expect to find a patient.” However,

this did not include the possibility of a patient landing on a nonsurface such as a hospital staff member or, as one hospital reported, a patient losing his or her balance and coming to rest against a wall, sustaining a minor injury in the process. Under the revised guidelines, a fall is “a sudden, unintentional descent . . . that results in the patient coming to rest on the floor, on or against some other surface (eg, a counter), on another person, or on an object (eg, a trash can).”

### **Baby drops**

On neonatal units, the safety concerns are not falls during ambulation but events in which a baby rolls or slides off the edge of a bed or some other piece of furniture and events in which the baby is dropped while being carried, held, or transferred from person to person. These events can also occur with small children. Rather than create a separate indicator for these events, we incorporated them in the expanded falls indicator. The revised fall definition includes any “sudden, unintentional descent,” making it broad enough to encompass both falls from furniture and drops.

Because of their unique nature, we created a special category for baby/child drops, which we defined as follows: “A fall in which a newborn, infant, or child being held or carried by a healthcare professional, patient, family member, or visitor falls or slips from that person’s hands, arms, lap, etc.” In defining baby/child drops, the revised guidelines explicitly exclude falls from furniture, noting that drops “always involve the child and the person who drops the child.” Both falls from furniture and baby/child drops are counted in a unit’s total falls count.

## **CATEGORIZING FALLS**

One drawback of tracking total and injurious fall rates as measures of quality of care is that despite the assertion by the Centers for Medicare & Medicaid Services that fall-related injuries are “reasonably preventable,”<sup>11</sup> some falls cannot be prevented by reasonable mea-

asures and do not reflect on the quality of care provided by the hospital staff. For example, a patient admitted for surgery may sustain an injurious fall during an unrelated stroke or myocardial infarction. In these cases, the total and injurious fall rates are imperfect reflections of quality, and, understandably, hospital staff members do not like to be blamed. Thus, there would seem to be a need for differentiating between falls that do reflect negligence or some aspect of quality of care and those that do not.

A number of researchers have proposed schemes for categorizing falls by cause. Morse,<sup>12</sup> for example, proposed a scheme in which falls are categorized using 3 categories. *Unanticipated physiological falls* occur due to “physical conditions that cannot be predicted until the patient falls,” whereas *anticipated physiological falls* “occur in patients whose score on the MFS [Morse Fall Scale] indicates that they are at risk of falling.”<sup>12(p377)</sup> Morse used the term *accidental falls* to describe falls by patients who “cannot be identified before the fall and do not score at risk of falling on a predictive instrument . . .”<sup>(p377)</sup>

A full review of fall categorization schemes is beyond the scope of this article, but others have suggested categorizing falls as preventable or nonpreventable.<sup>13,14</sup> One pediatric falls collaborative adopted 9 categories of falls, including environmental, developmental, physical/psychological, response to treatment, family attentiveness, modesty, and horseplay.<sup>15</sup> These categorization schemes are based on attempts to understand falls in terms of causal factors, and use of any such scheme in practice requires hospital staff to identify the cause, or primary cause, of every fall.

## **ARGUMENTS AGAINST ADOPTING A CAUSE-BASED CATEGORIZATION SCHEME**

We were reluctant to adopt any of these schemes for the NDNQI for a number of reasons. For one, several of the terms involved are problematic. Describing some falls as

“accidental” seems to imply that some falls are *not* accidental, as if some falls are planned and happen “on purpose.” However, a descent that is intentional or planned is not a fall by most definitions and it follows that every fall is “accidental” by the usual definition of the word.

The terms *preventable fall* and *anticipated fall* are problematic for 2 reasons. First, their use could have negative implications and ramifications for hospital staff members, who might protest, “If the fall had been preventable I would have prevented it!” Second, a decision by a hospital to document a fall as “preventable” or “anticipated” for reporting to the NDNQI places the hospital at risk of litigation. An additional objection to describing a fall as “anticipated” or “predictable” is that it would often be inaccurate. Although one might argue after the fact that hospital staff should have anticipated a particular patient falling, it seems unlikely that hospital staff members allow many falls to occur that they have truly anticipated beforehand.

Another reason we were reluctant to adopt any of these schemes is the difficulty of identifying a single cause for every fall and the data reliability issues that would be associated with any attempt to do so. Most real-life phenomena involving human behavior have multiple causes and are difficult to fit neatly into categories based on cause, and falls are no exception. Certainly, there are cases in which a fall is caused solely by an unexpected physiological event, and in other cases, an unusual feature of the environment such as a wet floor may clearly be the culprit. In other falls, though, a combination of factors is at play.

For example, if a visually impaired patient falls while ambulating to the bathroom at night, should this be attributed to the visual impairment or the dim lighting? Or suppose an incontinent patient cannot reach the bathroom in time and slips on his own urine, or a patient with impaired gait slips because her nonskid socks have become turned around on her feet. In each case, both an intrinsic, physiological factor and an extrinsic, environmental factor are at play.

Complicating attempts to assign a single cause to every inpatient fall is the widespread use of medications, which are “particularly complex risk factors for falling.”<sup>16</sup> A number of drugs have been linked to fall risk in older adults,<sup>17,18</sup> but to our knowledge, there is no agreed-on, comprehensive list of medications known to increase fall risk. Even if there were such a list, it would likely change continually as researchers publish new findings, making it impossible for the NDNQI to track physiological fall rates across time using a stable physiological fall definition. Moreover, the degree to which various drugs increase the risk of falling differs by drug and may be influenced by interactions with other factors such as patient age, making it difficult to weigh the effect of medication in determining the primary cause of a particular fall.

For these reasons, we doubted that hospitals could reliably categorize falls by cause, and given the high value the NDNQI places on data reliability, we were reluctant to have hospitals report such data. Furthermore, even in cases in which a single causal factor can be clearly identified as primary, making this determination may involve hospital staff spending considerable time and effort—for example, reviewing the medical chart, conducting a “postfall huddle,” or checking the research literature to see if a particular drug has been linked to increased fall risk. The NDNQI currently collects as many as 20 data elements for a single patient fall, in addition to the data collected on numerous other indicators, and we are concerned that the growing data collection burden associated with an ever-expanding list of quality indicators may become detrimental to patient care. Clearly, quality measurement requires data collection, but the benefits (if any) of collecting highly detailed information on every adverse event must be weighed against the costs, including opportunity costs. Time spent gathering and reporting the minutiae of every fall (injurious or not), investigating the primary cause of each fall, reporting which type of hospital staff assisted each fall, and so on, is time not spent in patient care.

In the end, the only cause-based fall category introduced by the NDNQI was physiological falls, defined as falls “attributable to one or more intrinsic, physiological factors,” and we made use of this category optional, not required, for hospitals reporting data on falls. According to the updated guidelines, physiological falls can be “caused by a sudden physiological event such as hypotension, dysrhythmia, seizure, transient ischemic attack, or stroke,” occur “due to side effects of known ‘culprit drugs’ (eg, central nervous system-active drugs and certain cardiovascular drugs),” or be “attributable to some aspect of the patient’s physical condition such as delirium, intoxication, dementia, gait instability, or visual impairment.”

#### **CHOOSING FALL MEASURES FOR QUALITY TRACKING AND BENCHMARKING**

From a patient safety perspective, efforts to track and benchmark falls by cause seem to us to be somewhat beside the point. Ultimately, what matters most is not *why* a fall occurred, but (1) that it did occur, posing risk of harm, and (2) what its consequences were for the patient. Morse<sup>19</sup> estimated that 78% of falls are of the “anticipated physiological” sort, and given a long enough list of intrinsic risk factors, most falls can be attributed to some physiological cause; in many cases, advanced age alone would suffice. Attempts to categorize falls by cause may have unintended consequences, focusing the attention of hospital staff on the question of who/what is to blame for a fall and engendering the sense that an entire category of falls—those attributable to a physical condition or medication, say—is largely unpreventable. The latter problem would be mitigated by distinguishing between “anticipated” and “unanticipated” physiological falls, as Morse proposed, but we would prefer not categorizing falls by cause at all to a scheme requiring a second layer of categorization based on judgment about what kinds of falls should be anticipated.

If what matters is preventing the consequences of falls, especially injury and death, a couple of approaches to falls tracking and benchmarking are worth considering. One could argue that every fall represents an opportunity for an injury and the best way to prevent fall-related injuries is to prevent falls, much like the best way to prevent drunk driving fatalities is to prevent drunk driving. This approach is useful as far as it goes, and the total fall rate may be a suitable measure of quality and safety if defined in the sense of limiting opportunities for harm due to falling.

One potential limitation of the total fall rate is that noninjurious falls may be underreported.<sup>10</sup> For this reason, the rate of injurious falls, which are presumably harder to ignore and more likely to result in incident reports, may be a more valid measure of quality and safety, although quality and safety here are construed differently—that is, not in the sense of limiting opportunities for harm but in the sense of preventing actual, physical harm. However, a drawback of the injurious fall rate is that 2 otherwise identical falls may have different outcomes in terms of injury due solely to differences between the patients sustaining them; one could argue that both falls pose a risk of injury, both reflect quality of care and patient safety, and therefore both should be included in any fall-related quality measure.

Both the total fall and injurious fall rates have an additional limitation, namely, that falls assisted by hospital staff are treated the same as those that are not. Unassisted falls pose a greater risk of injury<sup>20,21</sup> and uniquely reflect quality of care in that they occur when staff members are absent, unaware that the patient needs assistance, or unable to help for some other reason.<sup>22</sup> For these reasons, some have argued that injury prevention efforts should be focused on unassisted falls.<sup>21,22</sup> An additional reason is that attempts to prevent all falls could discourage appropriate patient mobilization. We think both the rate of unassisted falls and the percentage of falls assisted are useful metrics for quality tracking and benchmarking.

## CONCLUSION

Data used for quality tracking and benchmarking should be valid, reliable, and collected at a manageable level of granularity. Highly detailed data may be useful for addressing a specific quality-related problem on a particular unit in a limited time frame, but the costs of collecting such data on a long-term basis can outweigh the benefits,

especially when the reliability of the data declines as the level of detail increases. In expanding the NDNQI falls indicator, we tried to balance the demand for new categories of falls with the NDNQI's requirement for definitions that allow for collection of reliable data while keeping in mind the growing data collection burden faced by hospital personnel and its ramifications for quality of care.

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