Identifying Vulnerable Patients at Heightened Risk for Medical Error

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The Institute of Medicine Report *To Err Is Human,* published in 2000, estimates that medical error contributes annually to 44,000 to 98,000 deaths in the United States among inpatients alone. Subsequent attempts to measure gains in the safety of health care delivery have not resulted in any significant progress. Although several specific populations of patients have garnered increased attention, including intensive care unit (ICU) patients, most discussions on patient safety and medical error focus on understanding specific types of events (eg, medication error) or care processes (eg, handoffs) rather than on population characteristics. Patient- and population-level risk factors are relevant to understanding and preventing medical error.

In this article, I describe selected populations of patients relevant to nurses who practice in diverse critical care and progressive care environments: patients in isolation, patients with low English proficiency or inadequate health literacy, racial and ethnic minority populations, and patients at the end of life. Recognizing which patients are at higher risk for medical error enables meaningful contribution to the improvement of health care safety. Additionally, such recognition promotes development of individualized nursing interventions that complement multidisciplinary plans and encourage partnership with patients in the evaluation of the safety of the patients’ own care.

**Medical Error**

An error is "an act of commission (doing something wrong) or omission (failing to do the right thing) that leads to an undesirable outcome or significant potential for such an outcome." Medical error does not require harm, only the potential for harm. An adverse event is any harm due to health care. The percentage of medical error that is preventable is poorly defined. Hemorrhaging associated with a supertherapeutic partial thromboplastin time (PTT) during a properly administered...
heparin infusion despite appropriate monitoring is an example of an unpreventable adverse event. If the PTTr is not monitored appropriately or the infusion rate is programmed incorrectly, this event would constitute a preventable adverse event and a medical error. Ultimately, many medical errors are attributed to factors in care delivery that can be modified to reduce risk, including communication strategies, workflow and staffing, appropriate education and orientation, and selection and maintenance of equipment.

**Patients in Isolation**

Mr Hastins arrives from a skilled nursing facility via the emergency department because he is experiencing chest pain. He undergoes urgent cardiac catheterization and is admitted in stable condition to the coronary care unit. Because of a vague history of a cardiac catheterization and is admitted, he has a remote history of pneumonia caused by methicillin-resistant Staphylococcus aureus and the isolation precautions ordered were unnecessary.

Isolating patients is a cornerstone of infection control. Beliefs about the benefits are strongly held, yet the implementation of isolation carries unintended and underappreciated consequences. Compared with other patients, patients in isolation receive less contact time with clinicians (including nurses) even when the isolated patients’ acuity is higher, are less likely to be examined by an attending physician in academic medical settings, and are less likely to have a daily note written by either a physician or a nurse in their medical record. Vital signs of patients in isolation are more likely to be measured or documented inaccurately, be incomplete, or not be monitored as ordered, and patient education is less likely to be documented. Ultimately, compared with other patients, patients in isolation are more likely to experience a preventable adverse event; they are 8 times more likely to experience a “failure of supportive care,” such as a fall, pressure ulcer, or fluid and electrolyte imbalance. Although mortality rates of patients in isolation are not higher, clearly the patterns of care delivery differ from those of other patients.

Recognition that isolation precautions are not a benign intervention emphasizes the importance of regular multidisciplinary evaluation of the necessity for isolation. Isolation precautions should be discontinued as soon as medically appropriate. Thoughtful decisions about staffing and patient care assignments that take into account whether patients are in isolation are legitimate. Conscious increase in nursing surveillance of patients in isolation and awareness of the inevitable alterations from the normal pattern of care may enable nurses to reduce risk posed to individual patients. The impact of multiple patients in isolation on a single unit has yet to be evaluated, but anecdotally, many nurses have had a patient fall out of bed while the nurse was “stuck,” fully garbed and out of earshot, in an isolation room.

**Limited English Proficiency**

Mr Valocivich arrives back in the ICU after placement of a jejunostomy tube. Earlier in the day, he had reported nausea, and his nurse follows up by asking, “Are you feeling alright since you came back? Are you still nauseated?” Mr Valocivich’s interpreter accurately translates the question, and the patient replies in his native language, “I’m better. I vomited a little when I was downstairs. Mostly, my belly just hurts now.” The interpreter translates the response as “the nausea is mostly gone; he vomited earlier” but omits the reference to pain. Unaware of the new symptom, the nurse does not reassess Mr Valocivich, does not include the new symptom when signing out to the next shift or in clinical
documentation, and does not alert the care team. Several hours later, care providers discover that Mr Valocivich has a perforated jejunum, and emergency surgery is required.

More than 230 languages are spoken or signed in the United States. More than 10% of the US population speak a language other than English as their primary language; have a limited ability to read, speak, write, or understand English; and are thus characterized as having limited English proficiency (LEP).

Patients’ level of English proficiency tends to be overestimated both by the patients and by the members of the health care team who care for them. Patients with LEP experience adverse events culminating in physical harm at rates more than 50% higher than the rates of patients proficient in English and experience higher levels of harm when error does occur. Predictably, for patients with LEP, the adverse events are more commonly attributed to deficiencies in communication.

Title VI of the Civil Rights Act of 1964 and a 2000 Executive Order require meaningful access for individuals with LEP to federally conducted and funded programs, yet the regulations on provision of language services are vague and poorly enforced, and services are inadequately funded. Individual states also have various levels of legislation, funding, regulation, and enforcement, resulting in a patchwork of access that varies by state, language, institution, and health condition.

Advocacy by special interest groups or identified needs after high-profile or catastrophic incidents may result in highly specific language provisions but often do not focus on overall provision of general language services. For example, Spanish-language brochures about breast cancer but not about any other diseases or illnesses may be required, or consent forms may be developed in Arabic, Spanish, and English but not in any other languages. Identified barriers to expanding access to language services include lack of federal standards for interpreter certification, lack of reimbursement for language services, underdevelopment of the interpreter workforce, lack of understanding by members of the health care team of the impact of inadequate interpretation, and lack of knowledge of legal rights to language services among persons with LEP. Ultimately, adequate language services for all are not consistently available throughout the health care continuum.

Interpretation is a learned skill; the ability to accurately, precisely, correctly, completely, and consistently interpret clinically relevant information is essential to the ability of the health care team to diagnosis illness and manage care. Medical translation requires a “native or near-native, formal level of language proficiency, analytical capabilities, and deep cultural knowledge.” Interpreters, regardless of level of fluency or training, tend to polish, edit, and omit statements during translation. The most common error in medical interpretation is omission of clinically relevant information (as in Mr Valocivich’s case). Other error types include false fluency (use of a word that does not exist in the patient’s language), erroneous substitution of words, inserting the interpreter’s own opinion, and adding information.

In the absence of consistent standards for provision of language services, as well as financial constraints, many facilities rely on bilingual clinical and nonclinical staff to assume the role of interpreter. These interpreters often “mediate rather than interpret” information, altering the message on the basis of their own understanding of the exchange. In one evaluation of dual-role staff interpreters in an integrated health care system, only 1 in 5 interpreters had sufficient skills to serve as a medical interpreter. Ad hoc interpreters (a patient’s family or friends and
untrained clinical and nonclinical staff asked to interpret on an “as needed” basis) are more likely than trained medical interpreters to commit errors with potentially serious clinical consequences. In one study, nurses serving as interpreters were influenced by their own clinical interpretation of the situation and “slanted” the interpretations in ways that reflected unfavorably on the patients and undermined the patients’ credibility.

Errors in interpretation can lead to marked harm or death. An instance in 2000 involved a 13-year-old girl who was discharged after a short admission to a hospital because of abdominal pain. Her parents were told to follow up with a physician in 3 days or if her symptoms worsened. The parents misunderstood this message as instructions to wait for 3 days before seeking additional care. Two days later, unable to wait, they brought the girl to a local emergency room. Although she was airlifted to a tertiary care setting, she died of a ruptured appendix. Other errors related to interpretation have culminated in inappropriate placement of children in protective custody (se pegó was misinterpreted as “a girl was hit by someone else” instead of “the girl hit herself” when she fell off a tricycle); delay in diagnosis, resulting in death or risk of serious sequelae; and, in one instance, a $71 million malpractice settlement (when intoxicado was misinterpreted as meaning “intoxicated” instead of as the intended meaning of “sick to [one’s] stomach”).

In the critical care environment, compared with families who all speak English, families with members who do not speak English may receive less information about their loved one as well as less emotional support during family conferences. Evaluation of communications between patients’ families and health care providers during interpreted conferences revealed that alterations occurred 55% of the time and that more than 75% of the alterations had potentially important clinical consequences.

Nurses can resist serving as untrained, ad hoc interpreters or, if in a facility that expects dual-role interpreters, can advocate for validation of continued competency among interpreters. Specific skills for working with interpreters include speaking directly to the patient, using the same method for both English-speaking and non–English-speaking patients to verify that a patient understands a message, and debriefing interpreters, who are valuable resources in understanding the clinical and social situation of a patient and the patient’s family.

Inadequate Health Literacy

Mr Forman is a highly organized patient who has demonstrated a high level of health literacy throughout his treatment for cancer. On the third evening of an admission for neutropenic fever, his nurse witnesses him taking a “handful” of pills. He reports that he is taking his nightly metoprolol and furosemide (among others). He is puzzled when told that these medications were already administered to him earlier in the evening, just as they have been every evening during his stay. He contends he was paying attention during administration of the medications but says, “Well, I just know that I take my medications from my home medication organizer every night.” Unknown to his care providers, he has been getting double doses of ß-blockers, diuretics, pain medications, and sedatives.

Health literacy is “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health care decisions.” Poor health literacy affects nearly half the US population. Events related to low health literacy often become anecdotes among health care providers, but these events often represent a real risk of harm to patients. In the United States the estimated annual cost of events associated with low health literacy is $106 billion to $238 billion.

Healthy literacy encompasses more than English proficiency or the ability to read. Healthy literacy is a complex skill set that includes numerical literacy as well as the ability to adequately communicate with members of the health care team, fill out complex forms, and understand concepts related to risk and probability. Consequences of low health literacy include failure to follow instructions, inability to articulate and recognize symptoms or signs that require attention, lack of understanding of treatment options, and overuse or underuse of health care resources. These consequences may ultimately result in a failure to reach an appropriate diagnosis. Low health literacy disproportionately affects patients who are more than 65 years old, are members of minority groups, are immigrants, are members of a lower-income group, or have chronic physical and mental health conditions.

A person’s degree of health literacy may vary according to the
immediate context. Patients who experience depression, uncontrolled pain, additional stressors, or complex medical situations may have periods of low health literacy despite a history of skilled navigation of health care. Cognitive deficits related to low cerebral perfusion, narcotics, chemotherapy, and other interventions heighten the likelihood of periods of lower health literacy. In some instances, a patient’s own lack of insight related to a cognitive deficit, coupled with preexisting assumptions by health care providers about the patient’s ability to read or understand, make these errors difficult to recognize and prevent.

Nurses are in a unique position to conduct both formal and informal ongoing assessments of a patient’s level of health literacy. Identifying patients with low health literacy may be difficult, and little evidence exists for use for routine screening tools, whose results can be misleading and stigmatizing. Patients may reveal their lack of ability to understand when they ask for clarification or simply express their confusion about their disease and management plan. Strategies for nurses to increase patients’ level of health literacy include development of skills to detect indications of low health literacy (eg, incomplete forms); judicious use of available screening tests, such as the Rapid Estimate of Adult Literacy in Medicine (REALM); creation of more usable health information, including nonprint or multimedia resources; and using validated tools to evaluate the readability of existing health information tools. Nurses and other care providers should verify that the goals of education have been met by using return demonstration and “teach back” techniques, periodically reviewing a patient’s comprehension, and augmenting education with appropriate materials. The Joint Commission and other organizations have called on health care organizations to supply the needed resources to allow health care providers, including nurses, to develop appropriate patient-centered, culturally competent communication that addresses patients’ needs across the continuum of care and reduces the impact of low health literacy.

Successful nursing interventions for low health literacy culminate in meaningful discussion between the care team and the patient, full 2-way information exchange, and fully informed decision making and more effective self-management by the patient.

Racial and Ethnic Disparities

After complicated abdominal surgery, Mrs Gessler, an African American, acquired a large decubitus ulcer. As a result, she had an increased length of stay and could not be discharged directly to her home. Instead, she had a prolonged stay at a skilled nursing facility for wound care. For reasons not yet understood, Mrs Gessler was at higher risk for decubitus ulcer because of her race.

Racial and ethnic disparities in health care outcomes are well recognized, but evaluation of the incidence of disparities related to patient safety and medical error is relatively recent. In studies on the incidence of the patient safety indicators (including iatrogenic pneumothorax, pulmonary embolism, and decubitus ulcers) of the Agency for Healthcare Quality and Research, significant disparities were noted among racial and ethnic minority populations, despite adjustment for lifestyle factors, socioeconomic status, access to care, and other factors. In one study, African Americans had a higher risk of “most medical and nursing-related postoperative complications” than did other groups. Hispanic patients had the lowest risk of all groups. In another study, sex and race were independently significant for medication error.

The distribution patterns of rates of patient safety indicators and medication error rates across various racial and ethnic minority populations suggest that systemic differences within health care institutions in the way certain populations are treated contribute to increased rates of medical error. One conceptual model for understanding racial and ethnic disparities in patient safety proposes that higher prevalence of unassessed risk factors for medical error (eg, greater disease complexity, less continuity of health care due to reduced access) and errors of omission and deviation from optimal practice are frequent and particularly important for racial and ethnic minorities.

Proposed actions for increasing understanding of, and thus reducing, racial and ethnic disparities in patient safety include organizational and individual interventions. Organizations, both local and federal, can support evaluation of the incidence and pattern of medical error within distinct population groups, not just racial and ethnic minorities. Frameworks for personal action include embracing concepts of prospective moral responsibility and evaluation of latent and overt
conditions that may contribute to increased risk.43

End of Life

Ms Carson is terminally ill with ovarian cancer. After the decision to use comfort care only, she is transferred late in the day from the ICU to a general unit. She had been receiving 50 mcg of fentanyl every 1 to 2 hours as needed, but the transfer order is written as 50 mcg of fentanyl every 6 hours as needed. The nursing staff and the provider caring for her overnight are unfamiliar with her previous care, and her narcotic dosage is not adequately adjusted until her regular care provider arrives the next morning. Overnight, Ms Carson experiences pain and anxiety.

Solely on the basis of health care utilization patterns, terminally ill patients are significantly more likely than other patients to be affected by medical error.45,46 Deficiencies in the current system of health care delivery are magnified for patients at the end of life; loss of continuity of care, greater fragmentation, and transfers between facilities or care settings can affect these patients dramatically.45 Although a medical error at the end of life may be viewed by providers (and patients) as less critical than errors at other times, an end-of-life error can increase suffering, reduce or lengthen a patient’s remaining time against the patient’s wishes, and possibly cause distress to patients and the patients’ loved ones.46,47

Errors of omission are particularly relevant at the end of life. Failure to adhere to evidence-based practices that can alleviate pain, dyspnea, nausea, depression, and other signs and symptoms constitute medical errors of omission. For example, late administration of an antiemetic, resulting in a period of nausea, constitutes medical error, particularly when absence of nausea is a primary and attainable goal of treatment.

Unwanted care at the end of life also constitutes medical error.47,48 Resuscitation efforts, enteral feeding, and other interventions against the wishes of a patient constitute harm to that individual, regardless of whether the provider was aware of the patient’s desires.48 Lynn and Goldstein48 contend that the failure of health care teams to plan appropriately for predictable changes in a patient’s status during the patient’s dying, including the failure to include clear and specific language in advanced directives and anticipate communication needs during hand offs, transfers of care, and changes in health status, constitute system-level failures that culminate in error at the end of life.

Patients at the end of life may be physically or cognitively unable to maintain or develop the level of health literacy necessary to ensure safe care, particularly as their care becomes increasingly complex or the goals of treatment change. The responsibility to actively participate in ensuring safe care may be perceived as burdensome or irrelevant to terminally ill patients and the patients’ loved ones.49

Guidelines45,50,51 for patients seeking to enhance the safety of their own care, such as those published by the Agency for Healthcare and Research Quality and the Joint Commission, emphasize personal mastery and vigilance, which may be inappropria}
very attentive to his care and who also watches a lot of CSI) has seen a little bubble creeping up his intravenous tubing. When the nurse reaches the room, Mr Frye shows him that the rate on the pump is “a little higher than usual.” The intravenous potassium is being infused at 400 mL/h instead of 40 mL/h. After stopping the infusion, the nurse uses this event to apologize for the error, acknowledge the risk that was posed, thank Mr Frye for calling, and encourage his continued participation in ensuring safe delivery of health care.

Many of the populations of patients I have described are unable to give consistent and confident voice to their observations and concerns related to the safety of their health care. Whether patients are unable to express themselves to providers (because of LEP or low health literacy) or experience lower levels of clinical interaction (isolation), this lack of voice is a threat to patients’ safety.

Isolation for infection control, LEP, and inadequate health literacy contribute to risk for medical error. Other groups, including racial and ethnic minorities and patients at the end of life, may also experience increased risk, particularly related to errors of omission and deviations from evidence-based practice. Additional research is needed to evaluate whether other populations of patients are at higher (or lower) risk, including those cared for in newer settings (eg, electronic ICUs, short-stay or observation units, hybrid ICUs) and patients with additional barriers to verbal communication (eg, aphasia). Other environments that deserve further evaluation include facilities that treat large numbers of patients and those that operate at or above capacity. Providers’ beliefs about patients’ participation and responses to patients’ concerns significantly influence patients’ behaviors. Nurses who acknowledge a patient’s concerns, evaluate them proactively, and provide meaningful feedback to the patient encourage a patient-provider partnership for safety.


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The examples presented are based on scenarios described in published literature or are composites thereof and are not intended to reference actual, individual events.
Financial Disclosures

None reported.

References


Racial and Ethnic Disparities

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Helping Patients Find a Voice

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