

Implementation and Evaluation of an Inpatient Electrolyte Replacement Protocol for Patients With Hematologic Malignancies

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Electrolyte abnormalities are frequently seen in patients receiving treatment for hematologic malignancies and can affect ongoing treatment. Literature supports the use of an electrolyte replacement protocol using standard dosing to maintain electrolyte balance for high-risk patient populations. An advanced practice nurse–led team developed an inpatient nurse-driven electrolyte replacement protocol. Postimplementation, the average time from laboratory result to medication administration decreased from 344 minutes to 112 minutes. The protocol was also associated with fewer reported incidents of cardiac arrhythmias.

AT A GLANCE

- Patients with hematologic malignancies receiving chemotherapy, targeted treatments, and cellular therapy are at risk for electrolyte abnormalities.
- A standardized, nurse-driven electrolyte replacement protocol may result in more timely electrolyte rectification and fewer adverse events.
- Nurse practitioners can lead interprofessional teams and quality improvement projects to optimize care delivery and patient outcomes.

KEYWORDS

hypokalemia; electrolyte replacement protocol; nurse-driven protocol

DIGITAL OBJECT IDENTIFIER

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Electrolyte abnormalities are common in patients who receive treatment for hematologic malignancies, affecting about 60% of patients with acute myeloid leukemia (Rosner & Dalkin, 2014). Electrolyte abnormalities can occur from chemotherapy, malnutrition, and treatment side effects, such as nausea and vomiting. Concurrent medications, such as antimicrobials, immunosuppressants, proton pump inhibitors, laxatives, and diuretics, can lead to additional electrolyte depletion (Kuruppath & Patel, 2022; Workeneh et al., 2020).

Hypokalemia and hypomagnesemia are common abnormalities among patients with cancer (Kuruppath & Patel, 2022). Patients with these abnormalities can experience a range of mild to life-threatening complications, including neurologic disorders, prolonged corrected QT (QTc) intervals, and cardiac arrhythmias (Ajewole et al., 2020; Kuruppath & Patel, 2022). The literature demonstrates that prompt electrolyte repletion can reduce morbidity throughout hospitalization. Nurse-driven electrolyte replacement protocols (ERPs) are associated with better patient outcomes and high provider satisfaction rates within the critical care and oncology settings (Ajewole et al., 2020; Pearson et al., 2016).

The hematology-oncology and cellular therapy program at the University of California, Los Angeles, Health, an academic medical center, did not use an inpatient protocol for electrolyte replacement. Bedside nurses were required to contact the provider and obtain an order for critically low electrolyte levels. If the level was not critically low and reported by the bedside nurse to the overnight on-call provider, an order for repletion was placed only when the nurse practitioner (NP) reviewed patient laboratory values during morning rounds. The average time from laboratory value result to electrolyte repletion was about 344 minutes. In addition, repletion parameters and ordered dosing varied between providers. These factors contributed to the potential for patient care optimization (Ajewole et al., 2020). Because of the high acuity of the hematology-oncology population and an identified opportunity for improvement, a frontline NP implemented a nurse-driven