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Research in Action: Randomized Control Trial to Assess the Use of Patiromer as ED Treatment for Acute Hyperkalemia

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Elevated serum potassium (hyperkalemia) is associated with increased all-cause mortality and accounts for an estimated 800,000 ED visits anually in the United States. Still, there is no standardized emergency department (ED) treatment to reduce adverse events, and there are limited pharmacological options to remove excess potassium from the body. In general, potassium levels are regulated by the kidneys, but in patients with either chronic kidney disease (CKD) or acute kidney injury (AKI), a reduced glomerular filtration rate could lead to hyperkalemia. In addition to impaired renal function, hyperkalemia (serum potassium levels greater than 5.0 mmol/L) can be due to heart failure, diabetes, hypertension, traumatic injuries, and rhabdomyolysis. Currently, there is wide variation in approaches to treatment in the ED. One prospective study of more than 200 ED patients with elevated potassium levels found 43 different combinations of potassium-lowering therapies in the first 4 hours post-treatment.

The traditional potassium-binding medication sodium polystyrene sulfonate (Kayexylate) is no longer considered effective. Novel potassium binder medications such as calcium polystyrene sulfonate (Lokelma) and patiromer (Veltassa) provide a new option for reducing serum potassium levels. The FDA approved Patiromer in 2015 as an oral agent meant to be dissolved in fluids to treat chronic hyperkalemia. Currently, research is underway to determine whether patiromer is an effective option for managing acute hyperkalemia and suitable for use in the ED. Dr. Zubaid Rafique of Baylor University is leading the study “Patiromer Utility as an

Adjunct Treatment in Patients Needing Urgent Hyperkalemia Management" (PLATINUM): a multicenter, randomized, double-blind, placebo-controlled, parallel-group phase 4 clinical trial. Preliminary studies have shown that Patiromer is effective as a potassium-lowering therapy in the ED. However, the utility of patiromer in the ED setting has not yet been rigorously studied. For the PLATINUM study, a participant receives study medication along with the standard of care therapy defined as 10 mg albuterol, 5 units of insulin, and 25 g of glucose. Study staff will closely monitor potassium levels every 2 hours following the initial patient dosing of Patiromer.

The study's primary outcome is the number of additional potassium-lowering interventions needed to manage the patient's hyperkalemia. The secondary outcomes include potassium levels following the administration of the study medication and the length of hospital stay. In addition to answering questions about patiromer, this study will provide much-needed evidence to justify the standardization of ED use of shifting agents. This study design allows for the evaluation of patiromer's efficacy in the ED setting and may establish an evidence-based treatment framework that combines modern potassium binders with existing shifting medications commonly utilized in the ED.

The authors have no conflicts to report