Abstract:

Introduction: A functioning and reliable central venous access device is fundamental for home parenteral nutrition patients to administer essential nutrition. Complications of central venous access devices including occlusion, microbial colonization, and biofilm formation are problematic and sometimes life-threatening. A novel lock solution, 4% tetrasodium ethylenediaminetetraacetic acid, has properties that may reduce such complications.

Purpose: The aim of this study was to determine the safety, efficacy, and cost implications of implementing 4% tetrasodium ethylenediaminetetraacetic acid to prevent catheter-related complications in home parenteral nutrition patients.

Methods: A pre- and post-intervention study was carried over 36 months (12 months pre; 24 months post) by the British Columbia Home Parenteral Nutrition Program in Vancouver, Canada, where 4% tetrasodium ethylenediaminetetraacetic acid was implemented for patients at high risk for central venous access device occlusion and catheter-related infection. Patients were included in the study if they had previous central venous access device complications. The outcomes evaluated were central line-associated bloodstream infection, catheter occlusion requiring thrombolytic treatment, and catheter replacements.

Results: In total, 22 out of 105 patients met the inclusion criteria. Two patients were excluded from analyses due to non-adherence and concomitant use of other lock solutions. Post intervention, 20 home parenteral nutrition patients experienced significant reduction in the central line-associated bloodstream infection rate (pre = 1.918/1000 catheter days; post = 0.563/1000 catheter days; p = 0.04) There were no occlusion events reported post intervention.

Conclusion: For home parenteral nutrition patients, 4% tetrasodium ethylenediaminetetraacetic acid lock solution effectively reduces the risk of central venous access device complications including occlusions and catheter-related infections.

Reference: