The Association Between Catheter Type and Dialysis Treatment: A Retrospective Data Analysis at Two U.S.-Based ICUs.

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IMPORTANCE: Dialysis catheter type may be associated with differences in continuous renal replacement therapy (CRRT) treatment in the critically ill, with potential implications for patient outcomes and healthcare costs. OBJECTIVES: To evaluate the association between the catheter type and multiple dialysis treatment outcomes among the critically ill. DESIGN: Retrospective, observational study.

SETTING: Two U.S.-based ICUs. PARTICIPANTS: Critically ill patients receiving CRRT between April 1, 2018, and July 1, 2020. A total of 1,037 CRRT sessions were analyzed. MAIN OUTCOMES AND

MEASURES: Circuit life, alarm interruption frequency (including a subset of vascular access [VA]-related alarms), termination type (elective vs non-elective), and blood flow rates. Pre- (n = 530) and post catheter change (n = 507) periods were assessed, and the post-change period was further divided into intervals of pre-COVID (n = 167) and COVID contemporaneous (n = 340) to account for the pandemic's impact.

RESULTS: Compared with pre-change sessions, post-change sessions had 31% longer circuit life (95% CI, 1.14–1.49; $p < 0.001$), 3% higher blood flow rate (1.01–1.05; $p < 0.01$), and lower proportion of non-elective terminations (adjusted odds ratio [OR], 0.42 [0.28–0.62]; $p < 0.001$). There were fewer interruptions for all alarms (adjusted count ratio, 0.95 [0.87–1.05]; $p = 0.31$) and VA-related alarms (0.80 [0.66–0.96]; $p = 0.014$). The sessions during COVID period were statistically similar to pre-COVID sessions for all outcomes except a lower proportion of non-elective terminations (adjusted OR, 0.39 [0.22–0.70]; $p < 0.01$).

CONCLUSIONS: A change in catheter type was associated with longer CRRT sessions with fewer interruptions and unexpected terminations in a population of critical patients.