Infection Outbreak at Dialysis Centers Linked to Wall Boxes

Wall boxes were found to be the source of contamination for an outbreak of gram-negative bloodstream infections (BSIs) at three dialysis facilities, according to a report in *American Journal of Kidney Diseases*.

In August 2016, the Centers for Disease Control and Prevention (CDC) identified a cluster of BSIs with *Serratia marcescens* among patients at an outpatient hemodialysis center. The outbreak was identified by means of routine surveillance data reported to the National Healthcare Safety Network.

Further analysis identified BSIs caused by *S. marcescens* or similar gram-negative bacilli at dialysis facilities owned by the same company. In October to November 2016, an on-site investigation including CDC participation was performed to assess the scale of the outbreak and to identify the source of the infection.

Over a 17-month period, 58 patients who had undergone dialysis at one of the three facilities experienced gram-negative BSIs, defined as a positive blood culture for any gram-negative organism. The causative organism was *S. marcescens* in 50% of the infections, *Pseudomonas aeruginosa* in 21%, and *Pantoea agglomerans* in 19%. All these organisms are commonly found in water-related biofilms. Multiple gram-negative organisms were isolated in 28% of BSI cases. Eighty-three percent of patients were hospitalized, with a median 8-day length of stay.

Most patients with BSIs had a central venous catheter for dialysis access: matched odds ratio (mOR) 5.43. Other session-specific risk factors included dialysis performed after the first treatment shift, mOR 2.83; and involvement of more than three staff members in the patient’s care, mOR 3.75. Longer dialysis vintage was associated with a lower risk of infection, mOR 0.19.

The investigation identified problems with infection control practices at all three facilities, including deficient aseptic technique during central venous catheter care, missed opportunities for hand hygiene, and lapses in machine and station cleaning and disinfection practices. Inspection revealed problems with wall boxes at the dialysis facilities, including foaming and fluid regurgitation in wall box basins.

Gram-negative bacteria were found in environmental samples including tap water, sinks, and surfaces. All wall box samples showed at least one of the three most commonly isolated organisms. Pulsed-field gel electrophoresis of 18 patient isolates identified two clusters of *S. marcescens* at one facility and one cluster of *P. aeruginosa* at another. Control measures included a wall box drain care protocol and staff education on the importance of hand hygiene after touching wall boxes.

With wall boxes reported as the source of contaminated fluids and biofilms responsible for a large outbreak of gram-negative BSIs at related dialysis facilities, inadequate hand hygiene appears to have been the major mechanism by which pathogens spread from the wall boxes to patients. The investigators conclude: “Infections with gram-negative organisms commonly found in water-related biofilms should prompt investigation into water and sources of waste fluid serving as potential reservoirs in the health care environment.” [Novosad SA, et al. Multicenter outbreak of gram-negative bloodstream infections in hemodialysis patients. *Am J Kidney Dis* 2019; doi: 10.1053/j.ajkd.2019.05.012].

SGLT-2 Inhibitors Don’t Increase Risk of Severe UTI

Sodium–glucose cotransporter-2 (SGLT-2) inhibitors are not associated with an increased risk of severe urinary tract infection (UTI) in routine clinical practice, concludes a study in *Annals of Internal Medicine*.

Using two large commercial claims databases based in the United States, the researchers created propensity-matched cohorts of adults with type 2 diabetes who were initiating treatment with SGLT-2 inhibitors versus other antidiabetic drugs. Cohort 1 included matched groups of 61,876 patients starting SGLT-2 inhibitors versus dipeptidyl peptidase-4 inhibitors. Cohort 2 included groups of 55,989 patients starting SGLT-2 inhibitors versus glargine-like peptide-1 receptor agonists. Severe UTIs were defined as hospitalization for primary UTI, sepsis with UTI, or pyelonephritis. Outpatient UTI treated with antibiotics was evaluated as a secondary outcome.

In cohort 1, the incidence rate of severe UTIs (per 1000 person-years) was 1.77 in patients starting SGLT-2 inhibitors and 1.76 in those starting dipeptidyl peptidase-4 inhibitors. In cohort 2, the incidence rate of severe UTIs were 2.15 with SGLT-2 inhibitors and 2.96 with glargine-like peptide-1 receptor agonists.

There were no significant differences in sensitivity analyses including subgroups defined by age, sex, or frailty, or for canagliflozin versus dapagliflozin. There was also no increase in the risk of outpatient UTI events in patients starting SGLT-2 inhibitors.

Because SGLT-2 inhibitors increase glucose availability in the urinary tract, there is concern that they might increase the risk of genitourinary tract infections. Despite a U.S. Food and Drug Administration label warning, there is limited evidence on the association between these drugs and the risk of severe UTIs.

This large population-based study finds no increase in severe UTI events in patients with type 2 diabetes starting SGLT-2 inhibitor therapy, compared with other antidiabetic drugs. The researchers conclude: “[O]ther factors, including risk of infection, mOR 0.19, should be considered in decisions about whether to prescribe SGLT-2 therapy for patients with diabetes in routine care settings” [Dave CV, et al. Sodium–glucose cotransporter-2 inhibitors and the risk for severe urinary tract infections: A population-based cohort study. *Ann Intern Med* 2019; doi: 10.7326/M18-3136].

Empagliflozin May Reduce CKD Progression in Type 2 Diabetes

The sodium–glucose cotransporter-2 inhibitor empagliflozin may help prevent progression of chronic kidney disease (CKD) in patients with type 2 diabetes, independently of background medications that alter intrarenal hemodynamics, reports a study in *Kidney International*.

In that earlier study, 7020 patients with type 2 diabetes and established cardiovascular disease were randomly assigned to empagliflozin 10 mg or 25 mg or placebo, added to standard care. On primary analysis, empagliflozin reduced major cardiovascular events, cardiovascular mortality, and hospitalization for heart failure.

The current study evaluated the effects of empagliflozin on the risk of incident or worsening nephropathy. The analysis included the impact of four classes of background medications known to affect intrarenal hemodynamics: angiotensin-converting enzyme inhibitors/angiotensin receptor blockers (ACEis/ARBs), calcium channel blockers, diuretics, and nonsteroidal anti-inflammatory drugs (NSAIDs).

In all four subgroups of patients taking background medications known to affect intrarenal hemodynamics, the incidence of kidney events was lower with empagliflozin than with placebo. The protective effect of empagliflozin was consistent with that in the overall trial population, with no clinically relevant heterogeneity.

The use of empagliflozin in combination with other drugs did not increase the risk of serious adverse events or events leading to discontinuation.

The results suggest that the benefits of empagliflozin for patients with type 2 diabetes and established cardiovascular disease are consistent for patient subgroups taking widely used medications that affect intrarenal hemodynamics. The researchers conclude, “[O]ur data suggest that the proposed kidney mechanisms of empagliflozin (i.e., lowering of glomerular pressure) are preserved in patients already taking ACEis/ARBs, diuretics, calcium channel blockers, or NSAIDs.”