

Successful Ebola Treatment Spawns Guidelines

By Eric Seaborg

Although last fall's anxiety about the spread of the Ebola epidemic has receded, the outbreak continues in Africa. The possibility that U.S. hospitals will be treating more Ebola virus disease (EVD) cases cannot be discounted, and advance preparation is the key to coping with any infectious disease.

EVD treatment calls for special protocols—one in particular is the need to perform renal replacement therapy (RRT) in a biocontainment room. Several guidelines and resources have already appeared, including a proposal in an article, "Successful Delivery of RRT in Ebola Virus Disease," in the *Journal of the American Society of Nephrology*. The proposed guidelines are based on the successful experience at Emory University Hospital in treating the first documented case of RRT in a patient with EVD.

AKI is common in EVD patients. According to a "Frequently Asked Questions" resource posted on the ASN website: "In general, medical indications to initiate dialysis in patients with EVD will be similar to other patients with AKI and will involve considerations such as volume control, electrolyte [balance], acid-base balance, and severity of kidney dysfunction."

An overriding concern while treating such a highly infectious disease is to avoid exposure of health-care workers and the public, so the *JASN* article recommendations focus on tailoring dialysis proce-

dures for an isolation unit.

The guideline recommends using CRRT, with the possibility of changing to prolonged intermittent RRT using the same equipment.

Traffic in and out of the isolation unit needs to be minimized, so the treatment should be provided by "volunteer ICU nurses with specialized training in isolation protocols and in CRRT," rather than specialty dialysis nurses.

In keeping with Kidney Disease Improving Global Outcomes (KDIGO) recommendations, the right internal jugular vein is the preferred access site because it presents the lowest bleeding risk. A temporary nontunneled dialysis catheter should be placed under direct ultrasound visualization with an x-ray to confirm correct placement. A femoral access site should be used only when x-ray imaging to confirm placement is not available in the isolation unit.

The CRRT dosing should be consistent with KDIGO recommendations, such as a target to deliver "a total effluent dose of 20–25 mL/kg per hour unless higher dosing is needed to augment small solute and electrolyte clearance or correction of acidemia."

Although the CRRT effluent has a very low infectious risk, considering the environment where it is produced, it should be treated as hazardous waste and disposed of in keeping with institutional and local requirements.

The patient also needs to receive augmented nutritional support while receiving CRRT.

Because EVD is a hemorrhagic disease, the use of anticoagulation is a sensitive issue. The article recommends the use of regional citrate anticoagulation (RCA) to extend filter life and reduce the potential staff exposures due to filter exchanges.

Sarah Faubel, MD, professor of medicine at the University of Colorado, Denver, and head of ASN's AKI Advisory Group, said that RCA worked well in the Emory case, but is not required to provide CRRT to an EVD patient. RCA is not available in some centers and others may not want to use it because it requires frequent calcium monitoring, so the ASN guideline says a no anti-coagulation approach is possible using other measures to prolong filter life, including increasing blood flow rate and using pre-filter replacement fluid for hemodilution.

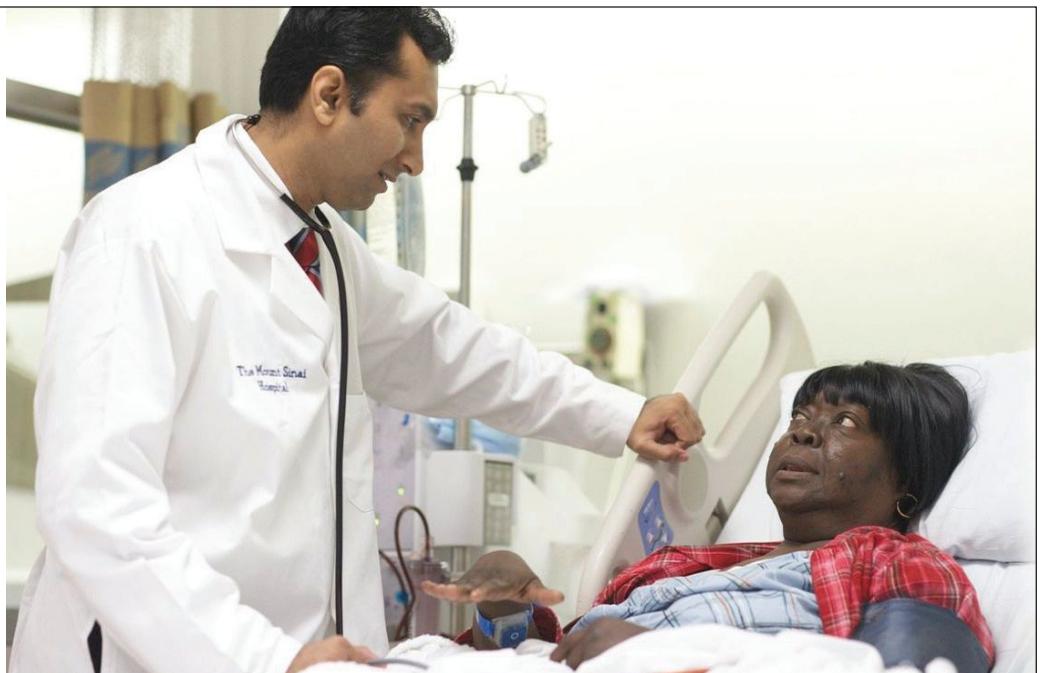
With this caveat, Faubel expressed support for the article's approach, as well as that of the ASN resource (<http://www.asn-online.org/news/2014/1017-ebola.aspx> guidelines) and Centers for Disease Control and Prevention recommendations (<http://www.cdc.gov/vhf/ebola/hcp/guidance-dialysis.html>).

Whatever the specifics of the protocol, the objective in treating an EVD patient is to provide supportive care until the patient's body responds and fights off the infection. ●

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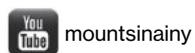
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