New strategies suggested for critical heart care in the ICU

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Patients in cardiac intensive care units (CICUs) could benefit from the CICU health care team using a daily checklist to prevent infections and

other common complications, according to a new American Heart Association Scientific Statement, "Prevention of Complications in the Cardiac Intensive Care Unit," published today in the Association's flagship journal *Circulation*. This Statement reviews evidence from general medical and surgical ICUs to identify opportunities to apply them to the care of critically ill heart patients and improve CICU outcomes.

"Patients admitted to cardiac intensive care often have serious, non-cardiovascular conditions, such as lung, kidney or liver disease, increasing their risk for complications," said Christopher B. Fordyce, M.D., M.H.S., M.Sc., chair of the writing group for the Scientific Statement, an assistant professor in the division of cardiology at the University of British Columbia and director of the cardiac intensive care unit at Vancouver General Hospital in Vancouver, Canada. "Cardiac patients require increasingly complex care, and it is important for cardiovascular health care professionals to be experts in treating both cardiovascular and non-cardiovascular conditions, and to understand ways to prevent complications in the CICU."

Coordinated care for CICU patients includes a multi-disciplinary team of health care professionals across various specialties. The use of a daily, bedside checklist during patient rounds is encouraged to provide standardized approaches to preventative care.

The checklist includes strategies to optimize care and prevent complications related to:

- infections;
- pain management;
- ventilator complications;l
- ack of mobilization (early mobilization is recommended for the majority of patients);

- gastrointestinal complications and proper nutrition;
- medication use and errors;
- device use; and
- inclusion of the appropriate specialists for multidisciplinary care.

Hand hygiene is a mainstay of infection prevention, and CICUs should monitor for the presence of pathogens. Other preventative strategies include proper cleaning and stringent disinfection of equipment and the environment.

Monitoring and support devices used in the CICU are also a source of potential infection. These include catheters, mechanical circulatory support and ventilators. The longer that these devices are used, the higher the risk of infection for these patients. Invasive devices should be used for as short a time as possible to reduce the risk of associated infections. Special attention to intravenous access sites, catheter placement, and monitoring for infection can reduce device-related infections and complications.

In the case of mechanical ventilation, required by more than 25% of CICU patients, noninvasive, positive pressure ventilation (e.g. ventilation through a nasal mask, face mask or nasal plugs) should be considered when appropriate. Daily, spontaneous breathing trials are important to test the patient's ability to breathe with minimal or no ventilator support. This allows early identification of patients who are ready to be taken off the ventilator.

Fordyce added, "A central tenet to preventing CICU complications is to anticipate the need for invasive procedures and devices to avoid emergency procedures when possible. Rates of infections and other complications are higher in urgent procedures."

As many as one-third of critically ill cardiac patients experience ICU-

acquired muscle weakness, which can be reduced with early, progressive mobilization. Mobilization protocols can help improve physical functioning, decrease time on a ventilator and shorten a hospital stay.

Routine adherence to the checklist can also help minimize gastrointestinal complications, feeding complications, medication errors and adverse drug events that are prevalent in ICU settings. Malnutrition, hyperglycemia and stress ulcers—common in the CICU—are associated with adverse outcomes, including increased length of hospital stay, readmission, infection and in-hospital mortality. In addition, using the lowest effective dose of medicines minimizes the potential adverse effects of the high-risk cardiovascular medications that are frequently prescribed in the CICU.

"Cardiac critical care is a growing field, and there is an urgent need to implement strategies to optimize care among patients admitted to the CICU," said Fordyce. "These strategies can help CICU professionals anticipate and prevent complications in this unique patient population, and we encourage critical care teams to reflect upon their current practices and consider implementing these strategies where any gaps exist."

More information: Christopher B. Fordyce et al, Prevention of Complications in the Cardiac Intensive Care Unit: A Scientific Statement From the American Heart Association, *Circulation* (2020). DOI: 10.1161/CIR.0000000000000909

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