Advisory 22-05 Extracorporeal Cardiac Life Support (ECLS)

To: All EMS Agencies and Providers

From: Jeremy T. Cushman, Regional Medical Director

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Recent advances in cardiac arrest care integrate the use of extracorporeal membrane oxygenation (ECMO). Termed Extracorporeal Cardiac Life Support (ECLS), this approach is increasingly being deployed across the world to treat cardiac arrest victims with specific presentations.

The attached clinical care guideline and algorithm is designed to identify those prehospital patients who may be eligible for this therapy which is only available through Rochester General or Strong Memorial Hospital Emergency Departments in concert with their cardiac surgery teams. The guideline must be followed as written in order to be potentially eligible for this therapy, but please understand that additional criteria which require determination at the hospital are required to implement ECLS and thus not all referred using this algorithm will ultimately be placed on ECMO. Should a patient not meet any of the criteria, or fall out of this guideline due to a change in clinical status, standard protocols shall then apply.

This Advisory complements Advisory 21-16 Automated Compression Devices which can be found here and outlines clinical guidance for the use of such devices as well as providing an important training resource.

This program is effective July 5, 2022 and a brief overview of the program for EMS practitioners can be found at https://youtu.be/1X-pcrdCPtk.

With any questions, please do not hesitate to contact this office.

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ESTRACORPOREAL CARDIAC LIFE SUPPORT (ECLS) FOR MANAGEMENT OF PATIENTS IN PERSISTENT VF/VT

BACKGROUND AND PURPOSE

One-third of out-of-hospital cardiac arrests (OHCA) present with an initial shockable rhythm.[i] Refractory VF/VT, defined as failure to achieve sustained return of spontaneous circulation (ROSC) after three defibrillation attempts, occurs in 50% of those presenting with an initial shockable rhythm.[ii] While VF/VT arrest has a functionally favorable survival rate of 29%, refractory VF/VT reduces survival to no more than 8-15%.[iii] [iv]

Recent advances in extracorporeal cardiopulmonary resuscitation (ECPR) utilizing extracorporeal membrane oxygenation (ECMO) for refractory VF/VT arrest has shown promise in improving the functional survival rate. A prehospital-initiated ECLS program in Minnesota, using criteria similar to those here, resulted in a 48% functionally intact survival of patients admitted to the ICU following ECMO placement.[v]

The availability of ECLS at the University of Rochester - Strong Memorial Hospital and Rochester General Hospital provides an opportunity to advance the dynamic and evolving care of out-of-hospital VF/VT in the setting of cardiac arrest care. As this program is established, initial availability of this resource is limited, however it is expected that with time, expansion can occur. Preliminary estimates suggest that two patients a month within our community may be eligible for this intervention. It is against this backdrop that the following care guidelines are offered to MLREMS practitioners.

CARE GUIDELINES

Patients with persistent VF/VT may, at the discretion of the treating practitioner, be considered for transport to the Strong Memorial Hospital Emergency Department (SMH ED) or Rochester General Hospital Emergency Department (RGH ED) for consideration of ECLS if it is the most appropriate destination, mechanical CPR can be provided throughout, and the patient meets all eligibility criteria outlined in the attached algorithm.

The care guidelines, including suspending epinephrine after 3 doses and limiting amiodarone to 300 mg, are standing order for patients being transported to the SMH or RGH ED under this algorithm.

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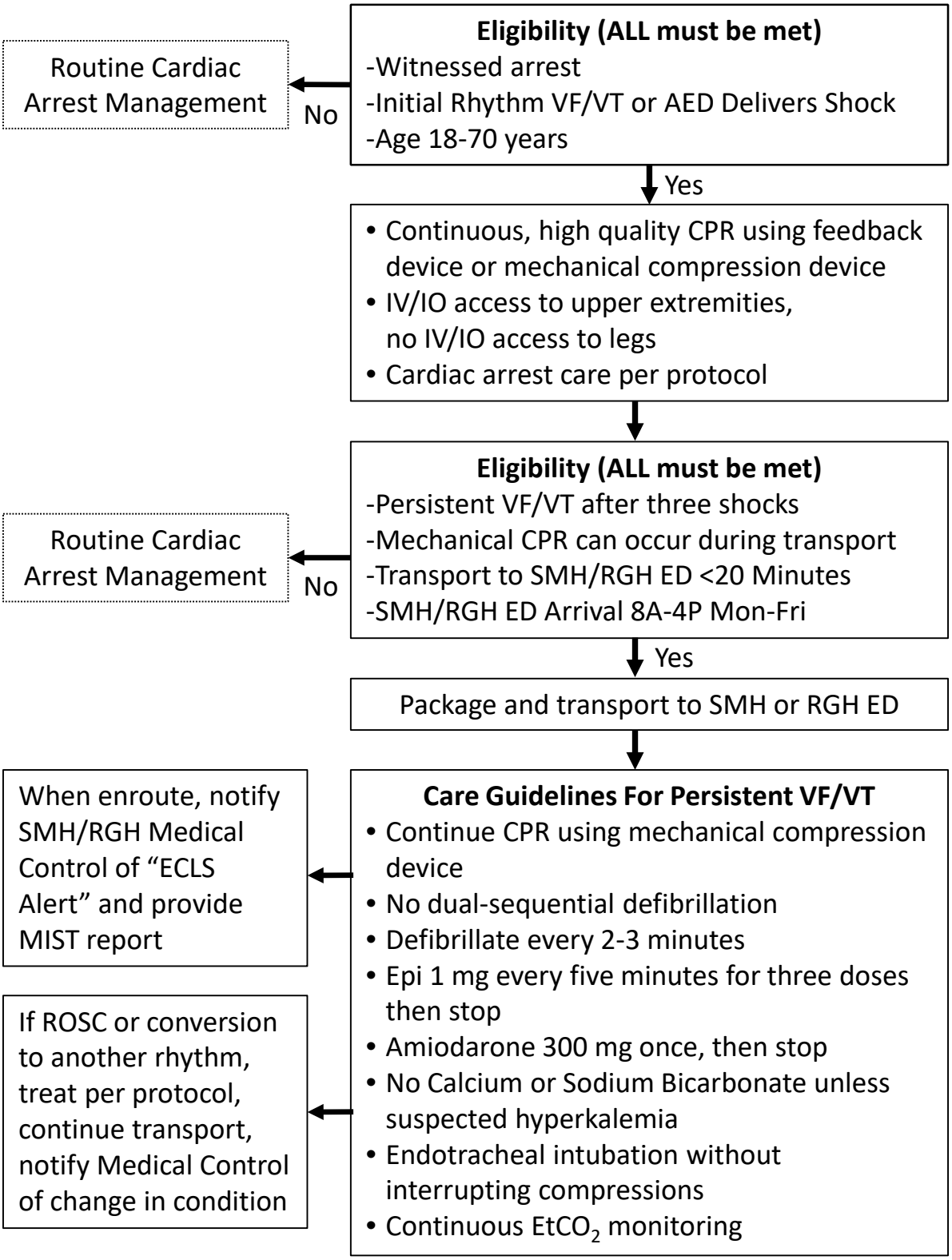
[i] https://doi.org/10.1016/S0140-6736(10)62103-4
[ii] https://doi.org/10.1056/NEJMoa1010076
[iii] https://doi.org/10.1056/NEJMoa1514204
[iv] https://doi.org/10.1016/j.jacc.2017.06.059
[v] https://doi.org/10.1016/j.resuscitation.2018.08.030

Prehospital ECLS Algorithm for Persistent VF/VT Arrest



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