Post-Cardiac Arrest Care - Adults

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PRESENTATION AND ASSESSMENT

Patient post cardiac arrest and ROSC

- Ongoing evaluation for cause of cardiac arrest
- Vital signs
- Glasgow Coma Scale
- STAT CBC with differential, comprehensive metabolic panel, PTT/PT/INR, ABG
- STAT portable chest x-ray
- STAT EKG
- Further labs and imaging as clinically indicated

TREATMENT

- Consult Cardiology, as indicated, to evaluate need for immediate angiography or need for mechanical circulatory support
- Maintain SBP ≥ 90 mmHg and MAP ≥ 65 mmHg
- Maintain normocarbia (end-tidal carbon dioxide of 30-40 mHg or PaCO₂ of 35-45 mmHg)
- Oxygenate at 100% FiO₂ until able to measure arterial oxygen saturation; then titrate FiO₂ to maintain oxygen saturation ≥ 94%
- For glucose management, see Inpatient Hyperglycemia – Adult algorithm and/or Hypoglycemia Management algorithm
- Discuss goals of care in collaboration with Primary Team

End of life measures to be initiated?

No

Yes

- Initiate end of life measures
- Medical management as indicated
- Consider Supportive Care consult

FiO₂ = fraction of inspired oxygen
MAP = mean arterial pressure
PaCO₂ = partial pressure of carbon dioxide
ROSC = return of spontaneous circulation
SBP = systolic blood pressure

1 Evaluation and recommendations to be documented in progress notes
2 Neurological status should not be used to determine need for immediate angiography
3 Optimal blood pressure should be determined based on optimal organ and brain perfusion for the individual patient
FURTHER ASSESSMENT AND TREATMENT

Transfer for higher level of cardiac care?

Yes

See Cardiac Emergencies – Triage/Transfer Process algorithm¹

Is patient comatose?

Yes

• Consider initiating targeted temperature management while evaluating transfer status (see Post Cardiac Arrest Targeted Temperature Management (TTM) algorithm)²
• Consider STAT EEG and Neurology consult while evaluating transfer status²
• Disposition as indicated

No

• Evaluate patient for targeted temperature management (see Post Cardiac Arrest Targeted Temperature Management (TTM) algorithm)²
• Consult Neurology²
• STAT EEG
• STAT CT head without contrast recommended within 24 hours if stable
• Avoid hyperthermia
• See Appendix A for Prognostic Considerations

No

Is patient comatose?

Yes

• Levetiracetam (Keppra®) 60 mg/kg IV loading dose³ for seizures (maximum 4.5 grams over 10 minutes)
• Levetiracetam (Keppra®) 1,000-4,000 mg/day IV for myoclonus
• Lorazepam 1-2 mg IV every 8 hours for refractory myoclonus on Levetiracetam (Keppra®)
• Further management per Neurology
• EEG monitoring

Myoclonus and/or seizures?

No

Continue medical management as indicated

No

● Continue medical management as indicated
● Continue goals of care discussions as indicated
● Disposition as indicated

DISPOSITION

Yes

No

● Continue medical management as indicated
● Disposition as indicated

GFR = glomerular filtration rate

¹Neurological status should not be used to determine need for immediate angiography
²Evaluation and recommendations to be documented in progress notes
³Reduce loading dose to 20 mg/kg IV if patient is already on levetiracetam (Keppra®) or GFR < 50 mL/minute/1.73 m²

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APPENDIX A: Prognostic Considerations

**Note:** Not every patient with return of spontaneous circulation (ROSC) will require every test

- Patients who remain comatose in the absence of confounders after ROSC should be evaluated for neurological prognosis at the earliest, 72 hours after ROSC.
- Patients with underlying terminal disease, brain herniation, or other non-survivable situations may be considered for withdrawal of care within 72 hours of ROSC.
- Determining neurologic prognosis should be based on a multi-modal approach with a primary focus on clinical assessment. Diagnostic testing which may aid in neurological prognosis include but are not limited to those listed below.
  - **Clinical assessment**
    - Bilaterally absent pupillary light reflex at 72 hours or more after ROSC
    - Absence of corneal and oculocephalic reflexes at 72 hours or more after ROSC
  - **Neurophysiology testing**
    - Somatosensory evoked potentials (SSEP) waves in combination with other indices
    - Malignant EEG patterns in combination with other indices
    - Persistent and refractory electrographic seizures
  - **Imaging**
    - Repeat CT head without contrast for gray white matter distinction
    - MRI brain without contrast to include diffusion-weighted (DWI), apparent diffusion coefficient (ADC), and fluid-attenuated inversion recovery (FLAIR) sequences
  - **Biomarkers**
    - Neuron-specific enolase (NSE) at 24 and 72 hours of ROSC

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1. A significant peripheral neuropathy, spinal cord metastasis, and/or brain metastasis may preclude accurate recordings.
2. Examples of malignant EEG patterns include non reactive EEG in the presence of very low voltage recording, significant burst suppression, generalized periodic discharges, alpha theta coma and stimulus triggered discharges.
3. Gray matter to white matter ratio may be considered when possible.
4. A NSE value of 40-60 micrograms/L or an upward trend has higher specificity for outcome prediction.
5. NSE could be elevated in certain cancers such as small cell lung cancer and other carcinoid tumors, hemodialysis, brain conditions (limbic encephalitis).
SUGGESTED READINGS


DEVELOPMENT CREDITS

This practice consensus statement is based on majority opinion of the Cardiopulmonary Resuscitation experts at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

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