



The following information is intended to serve only as a suggested approach to the management of myoclonus in post-cardiac arrest patients, given the lack of high-level evidence.

Commonly Used Terms and Definitions for Myoclonic Activity After Cardiac Arrest

Terminology	Definition	Note
• Status myoclonus • Clinical myoclonus without EEG evaluation	Repetitive myoclonic jerks that are diffuse or generalized, focal, or multifocal, occurring once every 10 s for at least 10 min or at least once every min for at least 30 min	• Clinical diagnosis that is made without EEG evaluation. • Status myoclonus cannot be differentiated from myoclonic seizures without an EEG. • This term is used only until the myoclonus is further characterized by EEG.
• Electroclinical myoclonic seizures/status epilepticus • Cortical myoclonus • Myoclonus with EEG correlate	Clinical manifestation of myoclonic jerks with a consistent and unequivocal EEG correlate that is not confounded by muscles artifact on EEG	• No definite distinguishable features on clinical exam • May require back averaging EEG-EMG for confirmation • Distinct electroclinical phenotypes have been identified, which may carry different prognostic implications.
• Subcortical myoclonus • Myoclonus without EEG correlate	Clinical manifestation of myoclonic jerks without EEG correlate	• No definite distinguishable features on clinical exam • Ascertaining lack of EEG correlate can be challenging in clinical practice and may be aided by use of neuromuscular blockade.

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Myoclonus and Electrographic Seizures

For any post cardiac arrest patient who develops myoclonus, the first goal should be to rule out seizures and hence an EEG should be obtained. If seizures/status epilepticus are observed on EEG then these should be treated aggressively. Even though there has been association with poor outcome in patients with seizures, small case series have suggested a potential for good outcome in a number of patients with lack of other unfavourable findings in whom protocolized seizure treatment was undertaken. [Beretta, Rosetti]. Electrographic seizures should be treated with an AED and there is no clear literature at this time indicating one is better than the other. Recommended AED loads: Levetiracetam 60 mg/kg load max 4.5 g; Valproic acid 40mg/kg load; or Phenytoin 20mg/kg load (Kapur). Note: routine seizure prophylaxis is not recommended.

Myoclonus and Ictal-Interictal EEG patterns

For patients in whom ictal-interictal patterns exist there is limited evidence for treatment although recent AHA guidelines [Hirsch] suggest they should be treated as seizures given the unknown potential for ongoing neuronal damage versus simply an endstage consequence of a hypoxic brain for which treatment would not alter course. The treatment of rhythmic, periodic patterns detected on EEG without a clinical correlate have not demonstrated improved outcome (Ruijter).

Myoclonus without EEG correlate

In patients in whom acute posthypoxic myoclonus occurs without an EEG correlate, recent guidelines suggest that no treatment is recommended, as there has been no evidence of brain injury with the muscle activity that occurs in this presentation [Hirsch,Young]. There have been no studies in this population of patient to determine if treatment would improve outcome. However, when the manifestation of myoclonus interferes with ventilation, supportive care or causes distress in family members, the suppression of myoclonus may be considered to allow supportive care and time for eventual neuroprognostication and additional modalities to be documented. A standardized approach to suppress myoclonus not associated with seizures has not been determined. Suggestions include short-acting GABA-ergic agents: clonazepam dose to effect (may be sedating) or propofol in severe cases (allow appropriate time off propofol prior to neuroprognostication - 5 t_{1/2}). Additional agents may be needed.

Chronic Hypoxic Myoclonus

In general, acute posthypoxic myoclonus usually resolves within 24-72 hrs. However in rare cases, patients in whom myoclonus presents later as level of consciousness improves, myoclonus may represent chronic posthypoxic myoclonus (aka Lance Adams) which may be associated with a more favourable prognosis. Multiple antiseizure medications will likely be required to control the movement disorder (English, Rapun, Zheng). Neurologic consultation should be considered.