

SECTION: R-3

PROTOCOL TITLE: Hyperdynamic Crisis/Overdose

REVISED: October 15, 2014

GENERAL COMMENTS: Also known as sympathomimetics, this protocol includes cocaine, methamphetamine, amphetamine, and MDMA (ecstasy). It may include other stimulants as well. Patient care should be focused on preventing/mitigating hyperthermia, agitated delirium, positional asphyxia, hypoxia, and physical self-harm. With true hyperdynamic crisis (tachycardia, agitation, hyperthermia, and/or hypertension) treatment with benzodiazepines is indicated in addition to rhythm specific therapy or anti-hypertensive meds (with the exception of beta-blockers).

BLS SPECIFIC CARE: See Protocol M-1, PM-1, PM-9

- Calm low stimulus environment
- Monitor temperature by whatever means feasible. Cool as appropriate
- Allow for adequate heat dissipation
- Attempt to identify co-morbid factors and other medical issues, including poly-pharm involvement
- If pediatric patient, determine patient's color category on length based resuscitation tape (Broselow Tape.)
- Physical restraints as necessary
- Obtain patient's temperature and cool/warm as necessary
- Position patient as appropriate

ILS SPECIFIC CARE: See Protocol M-1, PM-1, PM-9

- Use Bunitrol administration set on medical patients less than 8 years of age

ALS SPECIFIC CARE: See Protocol M-1, PM-1, PM-9

Benzodiazepines for Hyperdynamic crisis, Acute Coronary Syndromes, as well as sedation.

Do not administer/discontinue administration if:

- Systolic BP < 90 mmHg
- Respiratory rate, SpO₂ and/or mental status diminishes

See Adult Behavioral Emergencies M-14 for Benzodiazepine dosing:

- Diazepam (Valium):
- Versed (midazolam) IV/IO/IM

Anti-emetics:

- Zofran (ondansetron) IV /IM/IO
 - ♦ Adult: 4 mg
 - ♦ Pediatric: 0.1 mg/kg to a maximum of 4 mg

Drug induced acute coronary syndrome (ACS) with ST changes, refer to protocol C-4

PHYSICIAN PEARLS:

The Hyperdynamic (stimulant) Toxidrome generally consists of:

- Restlessness
- Excessive speech and
- Excessive motor activity
- Tremor
- Insomnia
- Tachycardia
- Hypertension
- Hyperthermia
- Hallucinations
- Seizures

Management of agitated or combative patients: Use of sedatives (Benzodiazepines) is highly recommended for even moderate agitation from hyperdynamic use, and may decrease heat production, decrease cardiac toxicity, and improve outcomes, as well as improve provider safety.

MDMA, and the more toxic drug **PMA**, have both amphetamine and hallucinatory like effects. The stimulant effects of MDMA/PMA, which enable users to perform physical exertion (like dancing) for extended periods, may also lead to dehydration, tachycardia, and hypertension. MAOI's may potentiate toxic effects. While any of the hyperdynamics can be dangerous, MDMA and PMA especially have been known to cause a marked increase in body temperature (malignant hyperthermia) leading to rapid onset of muscle breakdown, DIC, renal failure, and cardiovascular system failure, as well as seizures.

Symptomatic tachycardias refractory to Benzodiazepines:

Lidocaine is the anti-arrhythmic of choice for refractory monomorphic ventricular tachycardia (VT). Magnesium Sulfate remains the anti-arrhythmic of choice for polymorphic VT (Torsades), although should be used with caution when hypotension is present.

Pacing VT: While large broad spectrum studies have not been performed, overdrive pacing at a rate of 100-120 PPM has been reported to terminate drug induced polymorphic VT (Torsades) refractory to other therapies. The AHA lists this intervention as *class indeterminate*; therefore it is not yet a standard intervention. Contact medical control for guidance.

Drug induced Acute Coronary Syndromes (ACS): The AHA notes that: "...Cardiac Catheterization studies have shown that nitroglycerine and phentolamine reverse cocaine induced vasoconstriction" and "Therefore, nitroglycerine and benzodiazepines are first line agents". **Beta-blockers in this setting remain controversial at best, and in many cases out right contraindicated.**