

SECTION: R-03

PROTOCOL TITLE: Hyperdynamic Crisis/Overdose

REVISED: 01MAY18

GENERAL COMMENTS: Also known as **sympathomimetic toxicity**, this protocol includes cocaine, methamphetamine, amphetamine, and MDMA (ecstasy) overdose. It may apply to 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.

BLS SPECIFIC CARE: See Protocol M-01, PM-01, PM-09

- Provide for a calm, low-stimulus environment
- Allow for adequate heat dissipation
- Attempt to identify polypharm involvement, comorbid factors, and other medical issues
- If pediatric patient, determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape.)
- Utilize physical restraints as necessary
- Obtain patient's temperature, and cool/warm as necessary
- Position patient as appropriate

AEMT/O.M. SPECIFIC CARE: See Protocol M-01, PM-01, PM-09

ALS SPECIFIC CARE: See Protocol M-01, PM-01, PM-09

Benzodiazepines for hyperdynamic crisis, Acute Coronary Syndrome (ACS), 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:

- Valium (diazepam)
- Versed (midazolam)
- Ativan (lorazepam)

Antiemetics:

Zofran (ondansetron)

IV /IM/IO:

- Adult: 4 mg, may repeat once at 15 minutes, max total dose of 8 mg
- Pediatric: 0.1 mg/kg, max total dose of 4 mg

For drug induced ACS with ST changes, refer to protocol C-03, "General Cardiac Care/ACS".

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 drug use. Sedation may decrease heat production and cardiac toxicity, increase provider safety, and improve overall outcomes.

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. MAOIs may potentiate toxic effects. While any hyperdynamic drug can be dangerous, MDMA and PMA are especially worrisome as they have been known to cause a marked increase in body temperature (malignant hyperthermia) leading to rapid onset of muscle breakdown, DIC, renal failure, seizures, and cardiovascular system failure.

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); however, it 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.”*

Protocol

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HYPERDYNAMIC CRISIS/OVERDOSE