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AHA 2008 Cocaine-Associated Chest Pain and Myocardial Infarction Slide Set

Based on the AHA 2008 Scientific Statement for Management of Cocaine-Associated Chest Pain and Myocardial Infarction

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AHA Guideline for Management of Cocaine-associated Chest Pain and Myocardial Infarction

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This slide set was adapted from the AHA 2008 Scientific Statement for the Management of Cocaine-Associated Chest Pain and Myocardial Infarction

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This scientific statement reflects a consensus of expert opinion following a thorough literature review that consisted of controlled clinical trials, cardiac catheterization laboratory studies, observational studies, case reports, and controlled in-vivo animal experiments.

It is important to note that a few recommendations in this statement differ slightly from those published in the 2007 ACC/AHA NSTE-ACS guidelines. All differences between the two documents are highlighted in this slide set.

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Applying Classification of Recommendations and Level of Evidence

SIZE OF TREATMENT EFFECT →

ESTIMATE OF CERTAINTY (PRECISION) OF TREATMENT EFFECT

	CLASS I *Benefit >>> Risk* Procedure/Treatment **SHOULD** be performed/ administered	CLASS IIa *Benefit >> Risk* *Additional studies with focused objectives needed* **IT IS REASONABLE** to perform procedure/administer treatment	CLASS IIb *Benefit ≥ Risk* *Additional studies with broad objectives needed; additional registry data would be helpful* Procedure/Treatment **MAY BE CONSIDERED**	CLASS III *Risk ≥ Benefit* *No additional studies needed* Procedure/Treatment should **NOT** be performed/administered **SINCE IT IS NOT HELPFUL AND MAY BE HARMFUL**
LEVEL A Multiple (3-5) population risk strata evaluated* General consistency of direction and magnitude of effect	■ Recommendation that procedure or treatment is useful/effective ■ Sufficient evidence from multiple randomized trials or meta-analyses	■ Recommendation in favor of treatment or procedure being useful/effective ■ Some conflicting evidence from multiple randomized trials or meta-analyses	■ Recommendation's usefulness/efficacy less well established ■ Greater conflicting evidence from multiple randomized trials or meta-analyses	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Sufficient evidence from multiple randomized trials or meta-analyses
LEVEL B Limited (2-3) population risk strata evaluated*	■ Recommendation that procedure or treatment is useful/effective ■ Limited evidence from single randomized trial or nonrandomized studies	■ Recommendation in favor of treatment or procedure being useful/effective ■ Some conflicting evidence from single randomized trial or nonrandomized studies	■ Recommendation's usefulness/efficacy less well established ■ Greater conflicting evidence from single randomized trial or nonrandomized studies	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Limited evidence from single randomized trial or nonrandomized studies
LEVEL C Very limited (1-2) population risk strata evaluated*	■ Recommendation that procedure or treatment is useful/effective ■ Only expert opinion, case studies, or standard-of-care	■ Recommendation in favor of treatment or procedure being useful/effective ■ Only diverging expert opinion, case studies, or standard-of-care	■ Recommendation's usefulness/efficacy less well established ■ Only diverging expert opinion, case studies, or standard-of-care	■ Recommendation that procedure or treatment is not useful/effective and may be harmful ■ Only expert opinion, case studies, or standard-of-care
Suggested phrases for writing recommendations†	should is recommended is indicated is useful/effective/beneficial	is reasonable can be useful/effective/beneficial is probably recommended or indicated	may/might be considered may/might be reasonable usefulness/effectiveness is unknown/unclear/uncertain or not well established	is not recommended is not indicated should not is not useful/effective/beneficial may be harmful

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Management of Cocaine-Associated Chest Pain and Myocardial Infarction

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Epidemiology of Cocaine Use in the United States

- Cocaine use is common
  - Cocaine is the most commonly used illicit drug in the U.S. after marijuana
  - 14% of people age 12 or older (34 million) have tried cocaine at least once
  - 1.5 million (0.6 %) Americans abused cocaine in 2002-3
- Cocaine related ED visits are common
  - Drug Abuse Warning Network reported 448,000 cocaine-related ED visits in 2005
  - Cocaine related ED visits have increased by 47% from 1999-2002
  - Most frequent age group is 35-44 years

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Pathophysiology

- Acute effects
  - Coronary artery vasoconstriction
  - Thrombus formation
  - Increased myocardial oxygen demand
- Chronic effects (long term use)
  - Left ventricular hypertrophy
  - Premature atherosclerosis

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Clinical Presentation

- Cardiopulmonary symptoms predominate (56%) and include:
  - Chest pain, most frequent symptom
  - Dyspnea
  - Diaphoresis
  - Palpitations
  - Dizziness
  - Nausea
  - Anxiety

  Aortic Dissection and “Crack Lung Syndrome” should be considered

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Clinical Characteristics in the Typical Patient With Cocaine-Induced Chest Pain

- Young age, usually less than 40 years
- Mostly males: 57-84 %
- Smokers: 84-91%
- Few other traditional cardiac risk factors
- Cocaine use within preceding 24 hours: 88%

Hollander. *Arch Intern Med*. **1995;(10):1081**
Mittleman.*Circulation.***1999;(21)2737**

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Prevalence of Cocaine Use in Patients with Chest Pain

- **359 unselected chest pain patients presenting to ED**
- **Urine Immunoassay for cocaine:**

Municipal Hospitals	**14-25%**	**+**
Suburbuan Hospitals	**7%**	**+**

Hollander *Ann Emerg Med*. 1995

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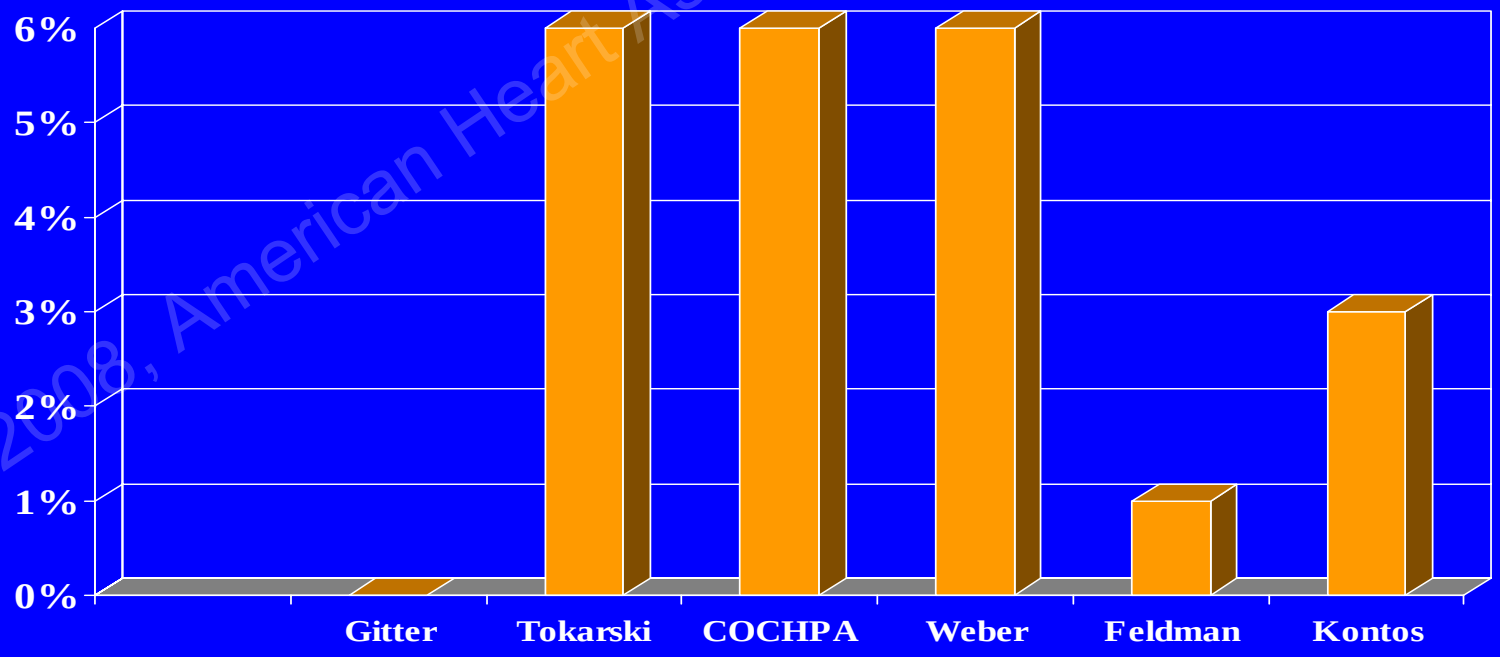
Incidence of AMI

ED studies report an overall incidence of cocaine associated MI of 0.7-6 % after cocaine ingestion



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Complications of Cocaine-associated MI

- **Cocaine-associated MI study**
  - **Retrospective study of 130 patients**
  - **38% had cardiac complications**
    - **Heart Failure 7%**
    - **Arrhythmias 43%**
      - **Bradyarrhythmia 20%**
      - **VT 18%**
      - **SVT 5%**
  - **90% of events occurred within 12 hours of presentation**
  - **In-hospital mortality rate of 0%**

Hollander et al. *Am J Cardiol*. 2007;99:822

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Diagnostic Strategies

- Clinical
  - History/Self-reported use of cocaine
  - Immunoassay for cocaine metabolites
- Electrocardiography
- Cardiac Biomarkers
- Echocardiography
- Coronary Angiography
- Evaluation in a Chest Pain Unit

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Therapeutic Strategies: Overview

- Patients with cocaine-associated ACS should be treated similarly to those with traditional ACS with a few notable exceptions
- There are no randomized, placebo-controlled trials regarding therapies to improve outcomes in patients with cocaine-associated MI
- Recommendations are based primarily on animal studies, cardiac catheterization laboratory studies, observational studies and case reports

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Treatment Recommendations

- Establish intravenous access
- Continuous EKG monitoring
- Oxygen
- Benzodiazepines (IB)
- Aspirin
- Nitroglycerin (IB)
- Phentolamine (IIb/C)
- Calcium channel blockers (IIb/C)
- PCI rather than fibrinolytics, when possible

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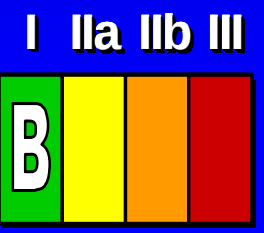
Benzodiazepines



Intravenous benzodiazepines have beneficial neuropsychiatric and hemodynamic effects, can relieve chest pain, and should be administered in the acute setting

New recommendation

ACC/AHA NSTEMI Guidelines
Benzodiazepines *No recommendation*

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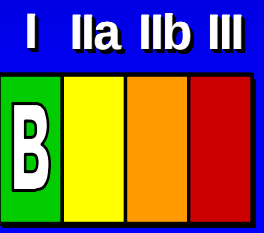
Nitrates



Nitroglycerin reverses cocaine associated vasoconstriction and relieves chest pain. Patients with ongoing ischemic discomfort should receive sublingual NTG (0.4mg) every 5 minutes for a total of 3 doses then intravenous NTG should be considered.

New recommendation

ACC/AHA NSTEMI Guidelines

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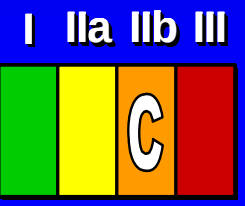
Phentolamine



Phentolamine reduces coronary vascular resistance and blood pressure in patients after cocaine ingestion

Phentolamine may be considered in patients with ongoing ischemic discomfort unresponsive to nitroglycerin or calcium channel blocker therapy

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ACC/AHA NSTEMI Guidelines ***No recommendation***

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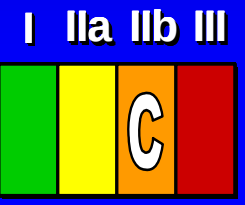
Calcium Channel Blockers



Calcium Channel Blockers should not be used as a first-line treatment but may be considered for patients with ongoing ischemic discomfort unresponsive to benzodiazepines and nitroglycerin

New recommendation

ACC/AHA NSTEMI Guidelines

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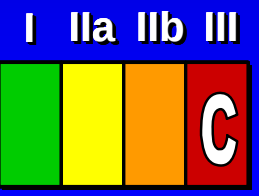
Beta-Blockers: Early Therapy



Beta-blockers increase blood pressure and enhance cocaine induced coronary vasospasm

All Beta-blockers, including those with alpha-adrenergic antagonist activity (labetalol, carvedilol) should be avoided in the acute setting

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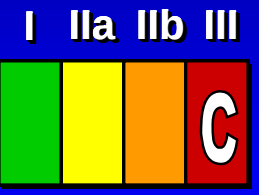
Labetalol

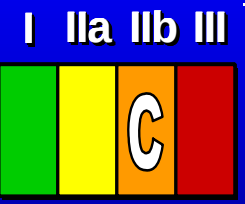


Combined alpha-and beta blocking agents do not appear to offer any advantages over traditional beta-adrenergic antagonists.

Labetalol increases the risk of death in animal models and does not reverse coronary artery vasoconstriction in humans.

Labetalol is not recommended in the acute setting

New recommendation



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Beta-Blockers: Long Term Therapy

Chronic Beta-blocker use should be considered only for those who are at low risk for recurrent use of cocaine and have strong indications:

- **Documented MI**
- **LV systolic dysfunction**
- **Ventricular Arrhythmias**

The decision should be individualized based on risk/benefit assessment and patient counseling

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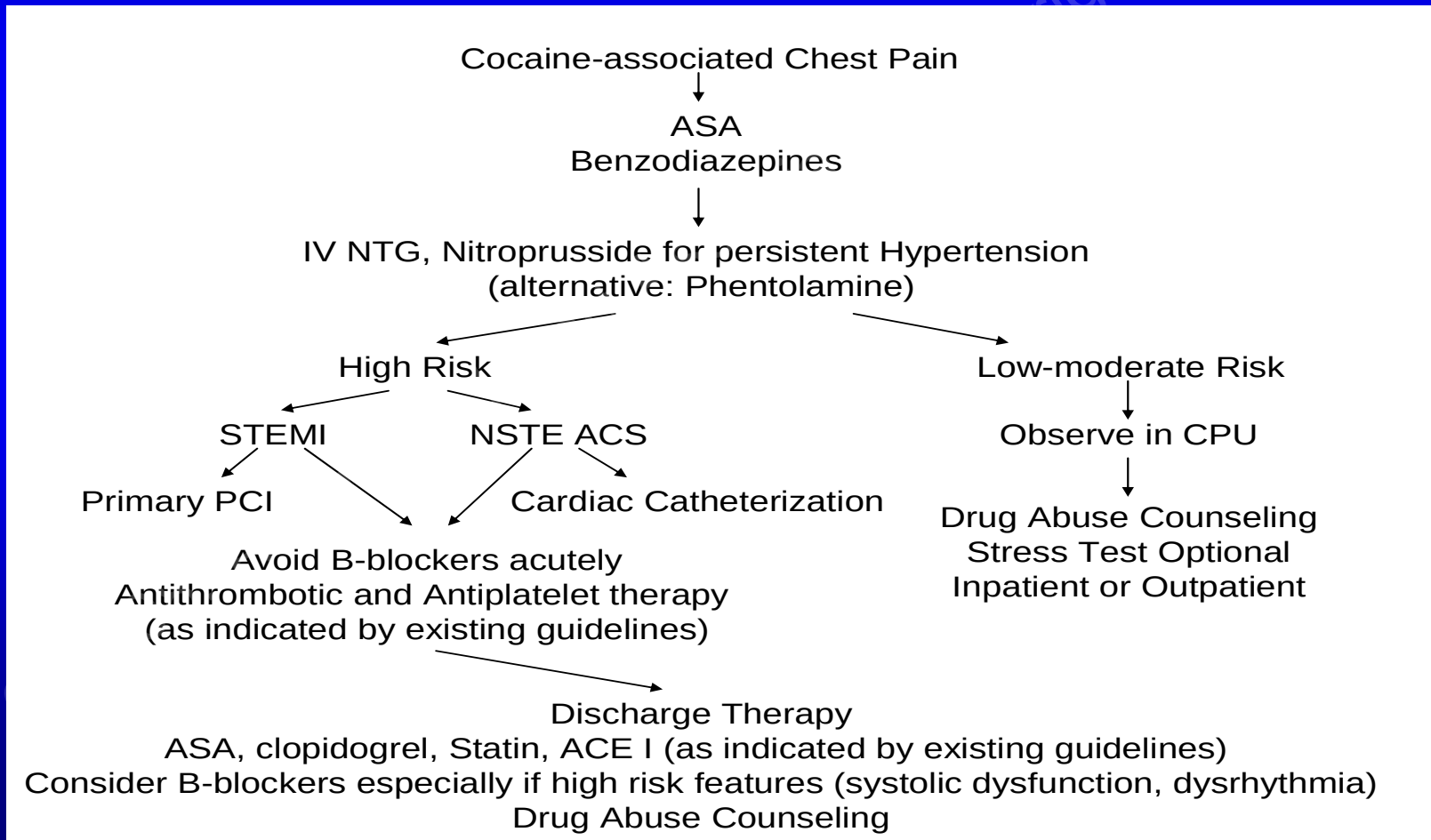
Therapeutic and Diagnostic Algorithm in Cocaine-associated Chest pain



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Cocaine Induced Chest Pain

The full-text guideline is also available on the American Heart Association Web site:

www.american-heart.org

http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.107.188950