



Complete Summary

GUIDELINE TITLE

Evidence based clinical practice guideline for management of hypertension following surgical repair of coarctation of the aorta in children greater than 6 months of age.

BIBLIOGRAPHIC SOURCE(S)

Cincinnati Children's Hospital Medical Center. Evidence based clinical practice guideline for management of hypertension following surgical repair of coarctation of the aorta in children >6 months of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2000 Jul 3. 4 p. [9 references]

COMPLETE SUMMARY CONTENT

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- IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Hypertension following surgical repair of coarctation of the aorta

GUIDELINE CATEGORY

Evaluation
Management
Treatment

CLINICAL SPECIALTY

Cardiology
Critical Care
Pediatrics
Surgery

INTENDED USERS

Advanced Practice Nurses
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide a clinical guideline for the effective management of hypertension following surgical repair of coarctation of the aorta

TARGET POPULATION

These guidelines are intended primarily for use in children 6 months through 17 years of age following surgical repair of coarctation of the aorta.

The guidelines do not address all considerations needed to manage those with the following:

- Evidence of significant residual coarctation of the aorta
- Presence of significant left ventricular dysfunction
- Contraindications to beta-blocker therapy especially history of bronchospasm

INTERVENTIONS AND PRACTICES CONSIDERED

Assessment

Continuous monitoring of systemic arterial blood pressure following surgery

Treatment

1. Initiation of nitroprusside to achieve an arterial blood pressure below the 90th percentile for age at the recommended dose
2. Use of esmolol as an adjunct to nitroprusside when adequate blood pressure is not achieved with nitroprusside alone at the recommended dose

MAJOR OUTCOMES CONSIDERED

Blood pressure control

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The recommendations contained in this guideline were formulated by an interdisciplinary working group which performed systematic and critical literature reviews, using a grading scale, and examined current local clinical practices.

During formulation of these guidelines, the team members have remained cognizant of controversies and disagreements over the management of these patients. They have tried to resolve controversial issues by consensus where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guidelines have been reviewed and approved by senior management, Legal Services, the Institutional Review Board, the hospital's Pharmacy and Therapeutics, Clinical Practices, Executive, and other committees and other individuals as appropriate to their intended purposes.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Each recommendation is followed by evidence grades (A-X) identifying the type of supporting evidence. Definitions of the evidence grades are presented at the end of the "Major Recommendations" field.

Clinical Assessments

1. It is recommended that systemic arterial blood pressure be maintained within the normal range for age following surgical repair of coarctation of the aorta. (See Table 1 in the original guideline document for age-specific blood pressure measurements.)

Note 1: Continuous monitoring of arterial blood pressure via an arterial line is recommended (Local Expert Consensus [E]).

Note 2: Obtain 4-limb blood pressure by cuff to assess potential residual coarctation gradient.

Note 3: Blood pressure may be affected by pain. Normal values assume adequate pain control.

Treatment Recommendations

2. It is recommended that nitroprusside be initiated and titrated to achieve an arterial blood pressure below the 90th percentile for age to a maximal dose of 3 micrograms/kg/min.

Note: Nitroprusside is an indirect stimulator of the sympathetic nervous system and can increase tachycardia in some patients. A second antihypertensive drug may be needed to achieve blood pressure control and avoid excessive tachycardia (Vincent et al., 1990 [D]; Gray et al., 1987 [D]).

3. It is recommended that esmolol be added as an adjunct in the treatment of systemic hypertension when adequate blood pressure control is not achieved with nitroprusside alone at the above recommended dose. (Vincent et al., 1990 [D]; Gray et al., 1985 [C]; Weist et al., 1998 [C]).

Note: Use with caution in patients with depressed left ventricular function, bradycardia, chronic airway disease, or bronchospasm (Weist et al., 1998 [C]; Cuneo et al., 1994 [C]).

Definitions:

Evidence Based Grading Scale:

- A: Randomized controlled trial: large sample
- B: Randomized controlled trial: small sample
- C: Prospective trial or large case series
- D: Retrospective analysis
- E: Expert opinion or consensus
- F: Basic laboratory research
- S: Review article
- M: Meta-analysis
- Q: Decision analysis
- L: Legal requirement
- O: Other evidence
- X: No evidence

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence is identified and classified for each recommendation (see "Major Recommendations") using the following scheme:

Evidence Based Grading Scale:

- A: Randomized controlled trial: large sample
- B: Randomized controlled trial: small sample
- C: Prospective trial or large case series
- D: Retrospective analysis
- E: Expert opinion or consensus
- F: Basic laboratory research
- S: Review article
- M: Meta-analysis
- Q: Decision analysis
- L: Legal requirement
- O: Other evidence
- X: No evidence

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate management of hypertension following surgical repair of the coarctation of the aorta in children under six months of age

POTENTIAL HARMS

- Nitroprusside can increase tachycardia in some patients.
- Esmolol should be used with caution in patients with depressed left ventricular function, bradycardia, chronic airway disease, or bronchospasm.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These recommendations are based on the most current and scientific information.
- These recommendations result from review of literature and practices current at the time of their formulations. This protocol does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the guidelines to meet the specific and unique requirements of individual patients. Adherence to this pathway is voluntary. The physician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The implementation process for each Cincinnati Children's Hospital Medical Center (CCHMC) guideline is a phase in a larger process of Guideline Development. This process is utilized for every guideline but is not addressed in the content of every guideline.

At the start of each guideline, a projected implementation date is determined. Reservations for education are then made (Grand Rounds, Patient Services Inservices). When the guideline is complete and enters into the Approval Process, education planning begins. Changes created by the guideline are outlined as well as anticipated outcomes. The implementation date is confirmed. Education is provided. The guideline is implemented and pilot information collection started. The Guideline Coordinator makes daily rounds and eligible children are followed to document the use of the guideline. The implementation phase aids in finding areas for improvement or question. When issues identified are improved, the guideline progresses to the monitoring phase.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Jul 3

GUIDELINE DEVELOPER(S)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

SOURCE(S) OF FUNDING

Cincinnati Children's Hospital Medical Center

GUIDELINE COMMITTEE

Clinical Effectiveness Team for Coarctation of the Aorta

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Cincinnati Children's Hospital Medical Center Web site](#).

For information regarding the full-text guideline, print copies, or evidence based practice support services contact the Children's Hospital Medical Center Health Policy and Clinical Effectiveness Department at HPCEInfo@chmcc.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on March 11, 2004.

COPYRIGHT STATEMENT

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FIRSTGOV

