



Complete Summary

GUIDELINE TITLE

Antibiotic prophylaxis in cardiac surgery.

BIBLIOGRAPHIC SOURCE(S)

Society of Thoracic Surgeons Workforce on Evidence Based Surgery. Antibiotic prophylaxis in cardiac surgery. Part 1, duration of prophylaxis. Chicago (IL): Society of Thoracic Surgeons; 2005. 20 p. [56 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
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SCOPE

DISEASE/CONDITION(S)

Postoperative infection following cardiac surgery

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Cardiology
Infectious Diseases
Internal Medicine
Thoracic Surgery

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To provide guidelines on the duration of antibiotic prophylaxis in adult patients undergoing cardiac surgery by answering the following key questions:

- Does the duration of antibiotic prophylaxis influence the probability of developing antibiotic-resistant bacteria?
 - If so, at what postoperative time does this become clinically significant?
- Does the duration of antibiotic prophylaxis influence the incidence of surgical-site infection (SSI)?
 - If so, at what postoperative time does this become clinically significant?

TARGET POPULATION

Adult patients undergoing cardiac surgery

Note: The following patients are excluded from the analysis: patients with active preoperative infections, those undergoing cardiac transplantation, patients on immunosuppressive therapy, patients having aortic replacement surgery, and those undergoing off-pump cardiac surgery.

INTERVENTIONS AND PRACTICES CONSIDERED

Prophylactic Intravenous Antibiotics

1. Single-dose (24 hour) or multiple dose (48 hour) prophylaxis
2. Duration of antibiotic administration (<48 hours; 48 hours; >48 hours)

MAJOR OUTCOMES CONSIDERED

- Surgical-site infections (SSI) including:
 - Soft tissue sternal infections
 - Suppurative mediastinitis
- Antibiotic resistance

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

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level A: Data derived from multiple randomized clinical trials

Level B: Data derived from a single randomized trial or from nonrandomized trials

Level C: Consensus expert opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

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

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Classification of Recommendations

Class I: Conditions for which there is evidence and/or general agreement that a given procedure is useful and effective

Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure

IIa: Weight of evidence favors usefulness/efficacy

IIb: Usefulness/efficacy is less well established by evidence.

Class III: Conditions for which there is evidence and/or general agreement that the procedure is not useful/effective

COST ANALYSIS

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

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of evidence (A-C) and classification of recommendations (I-III) are defined at the end of the "Major Recommendations" field.

Antimicrobial Resistance

Guideline Panel Conclusion: The duration of a prophylactic antibiotic regimen is directly related to the probability of developing resistant microorganisms.

Optimal Practice: The duration of a prophylactic antibiotic regimen is limited to the shortest amount of time required to effectively minimize the probability of postoperative infection. **Class IIa. Level B.**

Surgical Site Infection

1. Chest Tubes and Antibiotic Prophylaxis

- **Guideline Panel Conclusion:** The duration of antibiotic prophylaxis should not be dependent on indwelling catheters of any type.
- **Optimal Practice:** Decisions regarding the continuation of antibiotic prophylaxis are not guided by the presence of indwelling catheters. **Class IIb. Level C.**

2. Single-dose prophylaxis

- **Guideline Panel Conclusion:** Single dose antibiotic prophylaxis may be effective in cardiac surgery, but there are inconclusive data to confirm this effectiveness. There is insufficient evidence to recommend use of single-dose prophylaxis in cardiac surgery.
- **Optimal Practice:** Single-dose prophylaxis is used in circumstances the surgeon considers optimal for patient care. **Class IIa. Level B.**

3. Prophylaxis for 48 hours

- **Guideline Panel Conclusion:** Antibiotic prophylaxis of up to 48 hours duration is unlikely to produce antibiotic resistance.
- **Guideline Panel Conclusion:** Antibiotic prophylaxis of 48 hours duration is clinically effective in minimizing infectious complications in cardiac surgery.
- **Guideline Panel Conclusion:** Antibiotic prophylaxis of 48 hours duration may be as effective as prophylaxis administered for longer than 48 hours.

Summary Conclusions

There is evidence indicating that antibiotic prophylaxis of 48 hours duration is effective. There is some evidence that single-dose prophylaxis or 24-hour prophylaxis may be as effective as 48-hour prophylaxis, but additional studies are necessary before confirming the effectiveness of prophylaxis lasting less than 48 hours. There is no evidence that prophylaxis administered for longer than 48 hours is more effective than a 48-hour regimen.

Optimal Practice: Antibiotic prophylaxis is not continued for more than 48 hours postoperatively. **Class IIa. Level B.**

Definitions:

Levels of Evidence

Level A: Data derived from multiple randomized clinical trials

Level B: Data derived from a single randomized trial or from nonrandomized trials

Level C: Consensus expert opinion

Classification of Recommendations

Class I: Conditions for which there is evidence and/or general agreement that a given procedure is useful and effective

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Class III: Conditions for which there is evidence and/or general agreement that the procedure is not useful/effective

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence is identified and graded for some recommendations (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Use of appropriate duration of a prophylactic antibiotic regimen in patients undergoing cardiac surgery will minimize surgical site infection and the development of antibiotic resistance.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These guidelines should not be considered inclusive of all proper methods of care or exclusive of other methods of care reasonably directed at obtaining the same results. Moreover, these guidelines are subject to change over time, without notice. The ultimate judgment regarding the care of a particular patient must be made by the physician in light of the individual circumstances presented by the patient.
- Members of The Society of Thoracic Surgeons (STS) have always placed the interests and welfare of their patients above all other considerations. Accordingly, the STS has an obligation to critically examine the evidence to ensure that the management decisions are consistent with optimal patient care. This is precisely the role of STS practice guidelines.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

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

DATE RELEASED

2005

GUIDELINE DEVELOPER(S)

Society of Thoracic Surgeons - Medical Specialty Society

SOURCE(S) OF FUNDING

Society of Thoracic Surgeons

GUIDELINE COMMITTEE

Workforce on Evidence Based Surgery

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

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 [Society of Thoracic Surgeons Web site](#).

Print copies: Available from The Society of Thoracic Surgeons, 633 N. Saint Clair St., Suite 2320, Chicago, IL, USA 60611-3658

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

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