Complete Summary

GUIDELINE TITLE

Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway.

BIBLIOGRAPHIC SOURCE(S)

American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Anesthesiology 2003 May;98(5):1269-77. PubMed

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Difficult airway encountered during tracheal intubation

GUIDELINE CATEGORY

Management

CLINICAL SPECIALTY

Anesthesiology

INTENDED USERS

Health Care Providers
Physicians

GUIDELINE OBJECTIVE(S)

To facilitate the management of the difficult airway and to reduce the likelihood of adverse outcomes

TARGET POPULATION

Patients of all ages undergoing administration of anesthesia and tracheal intubation

INTERVENTIONS AND PRACTICES CONSIDERED

1. Preanesthetic evaluation (airway history, physical examination and additional evaluation, when indicated)
2. Preparation of the patient and equipment
3. Use of an intubation strategy or algorithm
4. Use of an extubation strategy or algorithm
5. Patient follow up care

MAJOR OUTCOMES CONSIDERED

- Detection of a difficult airway
- Successful management of the difficult airway
- Adverse events associated with difficult airway (death, brain injury, myocardial injury, airway trauma, damage to teeth)

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Scientific evidence was derived from aggregated research literature and from surveys, open presentations, and other consensus-oriented activities. For purposes of literature aggregation, potentially relevant clinical studies were identified via electronic and manual searches of the literature. The electronic search covered a 37-year period, from 1966 through 2002. The manual search covered a 60-year period, from 1943 through 2002. More than 3,000 citations were initially identified, yielding a total of 1,106 non- overlapping articles that addressed topics related to the 30 evidence linkages. After review of the articles, 538 studies did not provide direct evidence and were subsequently eliminated.

A total of 569 articles contained direct linkage-related evidence. Of these, 255 articles either used or included subjects with difficult airways.

NUMBER OF SOURCE DOCUMENTS

A total of 569 articles contained direct linkage-related evidence. Of these, 255 articles either used or included subjects with difficult airways.

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

The following terms describe the *strength* of scientific data obtained from the scientific literature:

Supportive: There is sufficient quantitative information from adequately designed studies to describe a statistically significant relationship ($P<0.01$) between a clinical intervention and a clinical outcome, using meta-analysis.

Suggestive: There is sufficient information from case reports and descriptive studies to provide a directional assessment of the relationship between a clinical intervention and a clinical outcome. This type of qualitative information does not permit a statistical assessment of significance.

Equivocal: Qualitative data have not provided a clear direction for clinical outcomes related to a clinical intervention and (1) there is insufficient quantitative information or (2) aggregated comparative studies have found no quantitatively significant differences among groups or conditions.

The following terms describe the *lack* of available scientific evidence in the literature:

Inconclusive: Published studies are available, but they cannot be used to assess the relationship between a clinical intervention and a clinical outcome because the studies either do not meet predefined criteria for content as defined in the "Focus of the Guidelines" or do not provide a clear causal interpretation of findings due to research design or analytic concerns.

Insufficient: There are too few published studies to investigate a relation between a clinical intervention and a clinical outcome.

Silent: No studies that address a relationship of interest were found in the available published literature.

The following terms describe survey responses from the consultants for any specified issue.

Responses are assigned a numeric value of agree = + 1, undecided = 0, or disagree = - 1. The average weighted response represents the mean value for each survey item.

Agree: The average weighted response must be equal to or greater than +0.30 (on a scale of -1 to 1) to indicate agreement.

Equivocal: The average weighted response must be between -0.30 and +0.30 (on a scale of -1 to 1) to indicate an equivocal response.

METHODS USED TO ANALYZE THE EVIDENCE

Meta-Analysis
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

A directional result for each study was initially determined by a literature count, classifying each outcome as either supporting an evidence linkage, refuting a linkage, or neutral. (Note: The linkages represent directional statements about relationships between clinical care and clinical outcome [i.e., successful intubation or airway-related adverse outcome] in difficult airway management.) The results were then summarized to obtain a directional assessment of support for each linkage, with the intent of conducting meta-analyses where appropriate. Summary statistics for selected outcomes commonly reported in the literature are shown in Table 4 of the original guideline document. These descriptive statistics separate the reported outcome data for difficult and nondifficult airway subjects.

There was an insufficient number of acceptable studies to conduct a meta-analysis for the difficult airway. However, two evidence linkages contained studies pertinent to the Guidelines with sufficient statistical information to conduct formal meta-analyses. These two linkages were as follows: linkage 2d (preanesthetic preoxygenation for 3 min vs. 4 maximal breaths) and linkage 6b (supplemental oxygen delivery by mask, blow-by, or nasal cannulae after extubation of the trachea).

Weighted mean effect sizes were determined for continuous outcome measures, and Mantel-Haenszel odds ratios were determined for dichotomous outcome measures. An acceptable significance level was set at $P<0.01$ (one-tailed). Tests for heterogeneity of the independent studies were conducted to assure consistency among the study results. DerSimonian--Laird random-effects odds ratios were considered when significant heterogeneity was found. To control for potential publishing bias, a "fail-safe N" value was calculated. No search for unpublished studies was conducted, and no reliability tests for locating research results were performed. For time to desaturation, the weighted mean effect size was d = 1.57 (CI, 0.98-2.14) for linkage 2 days (preanesthetic preoxygenation for 3 min vs. 4 maximal breaths). For reduced frequency of hypoxemia, the fixed-effects odds ratio was 5.98 (CI, 3.16-11.31) for linkage 6b (supplemental oxygen delivery by mask, blow-by, or nasal cannulae after extubation of the trachea).

Interobserver agreement among Task Force members and two methodologists was established by interrater reliability testing. Agreement levels using a kappa statistic for two-rater agreement pairs were as follows: (1) type of study design, kappa = 0.64-0.78; (2) type of analysis, kappa = 0.78-0.85; (3) evidence linkage assignment, kappa = 0.89-0.95; and (4) literature inclusion for database, kappa = 0.62-1.00. Three-rater chance corrected agreement values were as follows: (1) study design, Sav = 0.73, Var (Sav) = 0.008; (2) type of analysis, Sav = 0.80, Var (Sav) = 0.008; (3) linkage assignment, Sav = 0.93, Var (Sav) = 0.003; and (4) literature database inclusion, Sav = 0.80, Var (Sav) = 0.032. These values represent moderate to high levels of agreement.

The findings from the literature were supplemented by the opinions of Task Force members, as well as by surveys of the opinions of 50 anesthesiologists selected as consultants on the basis of their recognized interest in airway management. The statistic was used to obtain a quantitative measure of agreement among consultants. Consultants exhibited strong agreement (kappa $\geq$ 0.75) on the potential beneficial effects of the following activities: conduct of the airway history and physical examination, advance preparation of the patient and equipment, formulation of strategies for intubation and extubation of the difficult airway, and provision of follow-up care.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The American Society of Anesthesiologists (ASA) appointed a Task Force of 10 members to (1) review the published evidence, (2) obtain the opinions of anesthesiologists selected by the Task Force as consultants, and (3) build consensus within the community of practitioners likely to be affected by the Guidelines. The Task Force included anesthesiologists in both private and academic practices from various geographic areas of the United States and consulting methodologists from the ASA Committee on Practice Parameters.

These Practice Guidelines update and revise the 1993 publication of the ASA Guidelines for Management of the Difficult Airway. The Task Force revised and updated the Guidelines by means of a five-step process. First, original published research studies relevant to the revision and update were reviewed and analyzed. Second, the panel of expert consultants was asked to (1) participate in a survey related to the effectiveness and safety of various methods and interventions that might be used during management of the difficult airway, and (2) review and comment on draft reports. Third, the Task Force held an open forum at a major national anesthesia meeting to solicit input from attendees on a draft of the Guidelines. Fourth, the consultants were surveyed to assess their opinions on the feasibility and financial implications of implementing the Guidelines. Finally, all of the available information was used by the Task Force to finalize the Guidelines.

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

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The panel of expert consultants was asked to review and comment on draft reports. The Task Force held an open forum at a major national anesthesia meeting to solicit input from attendees on a draft of the Guidelines.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definition

A standard definition of the difficult airway cannot be identified in the available literature. For these guidelines, a *difficult airway* is defined as the clinical situation in which a conventionally trained anesthesiologist experiences difficulty with face mask ventilation of the upper airway, difficulty with tracheal intubation, or both.

The difficult airway represents a complex interaction between patient factors, the clinical setting, and the skills of the practitioner. Analysis of this interaction requires precise collection and communication of data. The Task Force urges clinicians and investigators to use explicit descriptions of the difficult airway. Descriptions that can be categorized or expressed as numerical values are particularly desirable, as this type of information lends itself to aggregate analysis and cross-study comparisons. Suggested descriptions include (but are not limited to):

1. Difficult face mask ventilation: (a) It is not possible for the anesthesiologist to provide adequate face mask ventilation due to one or more of the following problems: inadequate mask seal, excessive gas leak, or excessive resistance to the ingress or egress of gas. (b) Signs of inadequate face mask ventilation include (but are not limited to) absent or inadequate chest movement, absent or inadequate breath sounds, auscultatory signs of severe obstruction, cyanosis, gastric air entry or dilatation, decreasing or inadequate oxygen saturation (SpO_2), absent or inadequate exhaled carbon dioxide, absent or inadequate spirometric measures of exhaled gas flow, and hemodynamic changes associated with hypoxemia or hypercarbia (e.g., hypertension, tachycardia, arrhythmia).
2. Difficult laryngoscopy: (a) It is not possible to visualize any portion of the vocal cords after multiple attempts at conventional laryngoscopy.
3. Difficult tracheal intubation: (a) Tracheal intubation requires multiple attempts, in the presence or absence of tracheal pathology.

4. Failed intubation: (a) Placement of the endotracheal tube fails after multiple intubation attempts.

Evaluation of the Airway

History

An airway history should be conducted, whenever feasible, prior to the initiation of anesthetic care and airway management in all patients. The intent of the airway history is to detect medical, surgical, and anesthetic factors that may indicate the presence of a difficult airway. Examination of previous anesthetic records, if available in a timely manner, may yield useful information about airway management.

Physical Examination

An airway physical examination should be conducted, whenever feasible, prior to the initiation of anesthetic care and airway management in all patients. The intent of this examination is to detect physical characteristics that may indicate the presence of a difficult airway. Multiple airway features should be assessed (See table below entitled "Components of the Preoperative Airway Physical Examination").

Components of the Preoperative Airway Physical Examination

Airway Examination Component	Nonreassuring Findings
1. Length of upper incisors	Relatively long
2. Relation of maxillary and mandibular incisors during normal jaw closure	Prominent "overbite" (maxillary incisors anterior to mandibular incisors)
3. Relation of maxillary and mandibular incisors during voluntary protrusion of mandible	Patient cannot bring mandibular incisors anterior to (in front of) maxillary incisors
4. Interincisor distance	Less than 3 cm
5. Visibility of uvula	Not visible when tongue is protruded with patient in sitting position (e.g., Mallampati class greater than II)
6. Shape of palate	Highly arched or very narrow
7. Compliance of mandibular space	Stiff, indurated, occupied by mass, or nonresilient
8. Thyromental distance	Less than three ordinary finger breadths
9. Length of neck	Short
10. Thickness of neck	Thick
11. Range of motion of head and neck	Patient cannot touch tip of chin to chest or cannot extend neck

This table displays some findings of the airway physical examination that may suggest the presence of a difficult intubation. The decision to examine some or all of the airway components shown in this table depends on the clinical context and judgment of the practitioner. The table is not intended as a mandatory or

exhaustive list of the components of an airway examination. The order of presentation in this table follows the "line of sight" that occurs during conventional oral laryngoscopy.

Additional Evaluation

Additional evaluation may be indicated in some patients to characterize the likelihood or nature of the anticipated airway difficulty. The findings of the airway history and physical examination may be useful in guiding the selection of specific diagnostic tests and consultation.

Basic Preparation for Difficult Airway Management

At least one portable storage unit that contains specialized equipment for difficult airway management should be readily available. Specialized equipment suggested by the Task Force is listed in Table 2 of the original guideline document. If a difficult airway is known or suspected, the anesthesiologist should:

1. Inform the patient (or responsible person) of the special risks and procedures pertaining to management of the difficult airway.
2. Ascertain that there is at least one additional individual who is immediately available to serve as an assistant in difficult airway management.
3. Administer face mask preoxygenation before initiating management of the difficult airway. The uncooperative or pediatric patient may impede opportunities for preoxygenation.
4. Actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management. Opportunities for supplemental oxygen administration include (but are not limited to) oxygen delivery by nasal cannulae, face mask, laryngeal mask airway (LMA), insufflation, or jet ventilation during intubation attempts; and oxygen delivery by face mask, blow-by, or nasal cannulae after extubation of the trachea.

Strategy for Intubation of the Difficult Airway

The anesthesiologist should have a preformulated strategy for intubation of the difficult airway. The algorithm shown in Figure 1 of the original guideline document is a strategy recommended by the Task Force. This strategy will depend, in part, on the anticipated surgery, the condition of the patient, and the skills and preferences of the anesthesiologist. The strategy for intubation of the difficult airway should include:

1. An assessment of the likelihood and anticipated clinical impact of four basic problems that may occur alone or in combination:
    a. Difficult ventilation
    b. Difficult intubation
    c. Difficulty with patient cooperation or consent
    d. Difficult tracheostomy
2. A consideration of the relative clinical merits and feasibility of three basic management choices:

   a. Awake intubation versus intubation after induction of general anesthesia
   b. Use of noninvasive techniques for the initial approach to intubation versus the use of invasive techniques (i.e., surgical or percutaneous tracheostomy or cricothyrotomy)
   c. Preservation of spontaneous ventilation during intubation attempts versus ablation of spontaneous ventilation during intubation attempts
3. The identification of a primary or preferred approach to:

   a. Awake intubation
   b. The patient who can be adequately ventilated but is difficult to intubate
   c. The life-threatening situation in which the patient cannot be ventilated or intubated
4. The identification of alternative approaches that can be employed if the primary approach fails or is not feasible:

   a. Table below titled "Techniques for Difficult Airway Management" displays options for difficult airway management.
   b. The uncooperative or pediatric patient may restrict the options for difficult airway management, particularly options that involve awake intubation. Airway management in the uncooperative or pediatric patient may require an approach (e.g., intubation attempts after induction of general anesthesia) that might not be regarded as a primary approach in a cooperative patient.
   c. The conduct of surgery using local anesthetic infiltration or regional nerve blockade may provide an alternative to the direct management of the difficult airway, but this approach does not represent a definitive solution to the presence of a difficult airway, nor does it obviate the need for a preformulated strategy for intubation of the difficult airway.
5. The use of exhaled carbon dioxide to confirm tracheal intubation

Techniques for Difficult Airway Management

Techniques for Difficult Intubation	Techniques for Difficult Ventilation
Alternative laryngoscope blades	Esophageal tracheal Combitube
Awake intubation	Intratracheal jet stylet
Blind intubation (oral or nasal)	Laryngeal mask airway
Fiber optic intubation	Oral and nasopharyngeal airways
Intubating stylet or tube changer	Rigid ventilating bronchoscope
Laryngeal mask airway as an intubating conduit	Invasive airway access
Light wand	Transtracheal jet ventilation
Retrograde intubation	Two-person mask ventilation
Invasive airway access	

This table displays commonly cited techniques. It is not a comprehensive list. The order of presentation is alphabetical and does not imply preference for a given technique or sequence of use. Combinations of techniques may be employed. The techniques chosen by the practitioner in a particular case will depend upon specific needs, preferences, skills, and clinical constraints.

Strategy for Extubation of the Difficult Airway

The anesthesiologist should have a preformulated strategy for extubation of the difficult airway. This strategy will depend, in part, on the surgery, the condition of the patient, and the skills and preferences of the anesthesiologist. The preformulated extubation strategy should include

1. A consideration of the relative merits of awake extubation versus extubation before the return of consciousness
2. An evaluation for general clinical factors that may produce an adverse impact on ventilation after the patient has been extubated
3. The formulation of an airway management plan that can be implemented if the patient is not able to maintain adequate ventilation after extubation
4. A consideration of the short-term use of a device that can serve as a guide for expedited reintubation. This type of device is usually inserted through the lumen of the tracheal tube and into the trachea before the tracheal tube is removed. The device may be rigid to facilitate intubation and/or hollow to facilitate ventilation.

Follow-up Care

The anesthesiologist should document the presence and nature of the airway difficulty in the medical record. The intent of this documentation is to guide and facilitate the delivery of future care. Aspects of documentation that may prove helpful include (but are not limited to)

1. A description of the airway difficulties that were encountered. The description should distinguish between difficulties encountered in face mask or LMA ventilation and difficulties encountered in tracheal intubation.
2. A description of the various airway management techniques that were employed. The description should indicate the extent to which each of the techniques served a beneficial or detrimental role in management of the difficult airway.

The anesthesiologist should inform the patient (or responsible person) of the airway difficulty that was encountered. The intent of this communication is to provide the patient (or responsible person) with a role in guiding and facilitating the delivery of future care. The information conveyed may include (but is not limited to) the presence of a difficult airway, the apparent reasons for difficulty, how the intubation was accomplished, and the implications for future care. Notification systems, such as a written report or letter to the patient, a written report in the medical chart, communication with the patient's surgeon or primary caregiver, a notification bracelet or equivalent identification device, or chart flags, may be considered.

The anesthesiologist should evaluate and follow up with the patient for potential complications of difficult airway management. These complications include (but are not limited to) edema, bleeding, tracheal and esophageal perforation, pneumothorax, and aspiration. The patient should be advised of the potential clinical signs and symptoms associated with life-threatening complications of difficult airway management. These signs and symptoms include (but are not

limited to) sore throat, pain or swelling of the face and neck, chest pain, subcutaneous emphysema, and difficulty swallowing.

CLINICAL ALGORITHM(S)

An algorithm is provided in the original guideline document for the strategy for intubation of the difficult airway.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Scientific evidence was derived from multiple sources, including aggregated research literature (with meta-analyses when appropriate), surveys, open presentations, and other consensus-oriented activities. The findings of the literature analyses were supplemented by the opinions of Task Force members and surveys of the opinions of a panel of consultants.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Successful airway management
- Fewer adverse outcomes associated with difficult airway management

POTENTIAL HARMS

Complications of difficult airway management includes (but are not limited to) edema, bleeding, tracheal and esophageal perforation, pneumothorax, and aspiration.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The primary focus of these Guidelines is the management of the difficult airway encountered during administration of anesthesia and tracheal intubation. Some aspects of the Guidelines may be relevant in other clinical contexts. The Guidelines do not represent an exhaustive consideration of all manifestations of the difficult airway or all possible approaches to management.
- Practice guidelines are systematically developed recommendations that assist the practitioner and patient in making decisions about health care. These recommendations may be adopted, modified, or rejected according to clinical needs and constraints.
- Practice guidelines are not intended as standards or absolute requirements. The use of practice guidelines cannot guarantee any specific outcome. Practice guidelines are subject to periodic revision as warranted by the evolution of medical knowledge, technology, and practice. They provide basic recommendations that are supported by analysis of the current literature and

by a synthesis of expert opinion, open forum commentary, and clinical feasibility data.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Clinical Algorithm

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Anesthesiology 2003 May;98(5):1269-77. PubMed

ADAPTATION

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

DATE RELEASED

2003 May

GUIDELINE DEVELOPER(S)

American Society of Anesthesiologists - Medical Specialty Society

SOURCE(S) OF FUNDING

American Society of Anesthesiologists

GUIDELINE COMMITTEE

Task Force on Management of the Difficult Airway

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Task Force Members: Robert A. Caplan, MD (Chair), Seattle, Washington; Jonathan L. Benumof, MD, San Diego, California; Frederic A. Berry, MD, Charlottesville, Virginia; Casey D. Blitt, MD, Tucson, Arizona; Robert H. Bode, MD, Boston, Massachusetts; Frederick W. Cheney, MD, Seattle, Washington; Richard T. Connis, PhD, Woodinville, Washington; Orin F. Guidry, MD, Jackson, Mississippi; David G. Nickinovich, PhD, Bellevue, Washington; Andranik Ovassapian, MD, Chicago, Illinois

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American Society for Anesthesiologists Web site.

Print copies: Available from the American Society for Anesthesiologists, 520 North Northwest Highway, Park Ridge, IL 60068-2573.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on July 13, 2005. The information was verified by the guideline developer on July 20, 2005.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions.

DISCLAIMER

NGC DISCLAIMER

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at http://www.guideline.gov/about/inclusion.aspx .

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

© 1998-2008 National Guideline Clearinghouse

Date Modified: 9/15/2008