Guideline Summary NGC-10028

Guideline Title
Management of obstructive sleep apnea in adults: a clinical practice guideline from the American College of Physicians.

Bibliographic Source(s)

Guideline Status
This is the current release of the guideline. This guideline meets NGC's 2013 (revised) inclusion criteria.

Scope

Disease/Condition(s)
Obstructive sleep apnea (OSA)

Guideline Category
Management
Treatment

Clinical Specialty
Family Practice
Internal Medicine
Nursing
Otolaryngology
Pulmonary Medicine
Sleep Medicine
Surgery

Intended Users
Advanced Practice Nurses
Physician Assistants
Physicians
Respiratory Care Practitioners

Guideline Objective(s)
To present the evidence and provide clinical recommendations on the management of obstructive sleep apnea (OSA) in adults

Target Population
Adults with obstructive sleep apnea (OSA)

Interventions and Practices Considered
1. Weight loss through intensive weight loss interventions
2. Continuous positive airway pressure (CPAP)
   - Fixed CPAP
   - Auto-CPAP
   - C-Flex

3. Mandibular advancement devices (MADs)

Note: Other obstructive sleep apnea (OSA) treatments, including positional therapy, oropharyngeal exercise, palatal implants, surgical interventions, pharmacologic therapy, and atrial overdrive pacing, were considered but no recommendations were made because of insufficient evidence.

Major Outcomes Considered
- Cardiovascular disease (such as heart failure, hypertension, stroke, and myocardial infarction)
- Type 2 diabetes
- Death
- Sleep study measures (such as the Apnea-Hypopnea Index [AHI])
- Measures of cardiovascular status (such as blood pressure)
- Measures of diabetes status (such as hemoglobin A1c levels)
- Quality of life

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

The Tufts Evidence-based Practice Center conducted the systematic evidence review. The literature search included studies identified using MEDLINE (1966 to September 2010), the Cochrane Central Register of Controlled Trials, and the Cochrane Database of Systematic Reviews and included peer-reviewed studies on adult human patients published in English. Further details about the methods used to create the evidence review and exclusion criteria are published in the evidence review report (see the "Availability of Companion Documents" field). No randomized, controlled trial (RCT) on obstructive sleep apnea (OSA) treatment with regard to mortality outcomes was identified.

The American College of Physicians (ACP) supplemented the AHRQ review (MEDLINE search, 1946 to October 2012) to identify English-language observational studies on human reporting death or cardiovascular or cerebrovascular illness associated with OSA treatment strategies (that is, continuous positive airway pressure [CPAP], surgery, or mandibular advancement devices [MADs]), as well as more recent relevant RCTs.

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

This guideline rates the evidence and recommendations by using the American College of Physicians (ACP) guideline grading system, which is based on the system developed by the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) working group (see the "Rating Scheme for the Strength of the Recommendations" field).

Methods Used to Analyze the Evidence

Meta-Analysis of Randomized Controlled Trials

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

To guide the recommendations, outcomes were prioritized on the basis of clinical importance, starting with death and including cardiovascular outcomes. In the absence of statistically significant effects on clinical outcomes, symptoms were considered (such as Epworth Sleepiness Scale [ESS] scores) and other physiologic measures (such as the Apnea-Hypopnea Index [AHI]).

The Tufts Evidence-based Practice Center conducted the systematic evidence review. Evidence on the comparative effectiveness of OSA treatments is summarized in the Appendix Table in the original guideline document. Further details
on data extraction, quality assessment, and data synthesis are available in the systemic evidence review (see the "Availability of Companion Documents" field).

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

This guideline is based on a systematic evidence review sponsored by the Agency for Healthcare Research and Quality (AHRQ) (see the "Availability of Companion Documents" field) that addressed the following key questions related to obstructive sleep apnea (OSA) management:

1. What is the comparative effectiveness of different treatments for OSA in adults?
   a. Does the comparative effectiveness of treatments vary based on presenting patient characteristics, OSA severity, or other pretreatment factors? Are any of these characteristics or factors predictive of treatment success?
      i. Characteristics: Age, sex, race, weight, bed partner, alway, other physical characteristics, and specific comorbid conditions.
      ii. Obstructive sleep apnea severity or characteristics: Baseline questionnaire (and similar tools) results, formal testing results (including hypoxemia levels), baseline quality of life, positional dependency.
      iii. Other: Specific symptoms.

2. In patients with OSA who are prescribed nonsurgical treatments, what are the associations of pretreatment, patient-level characteristics with treatment adherence?

3. What is the effect of interventions to improve adherence to device use (positive airway pressure, oral appliances, and positional therapy) on clinical and intermediate outcomes?

Rating Scheme for the Strength of the Recommendations

<table>
<thead>
<tr>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Strong</td>
</tr>
<tr>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Low</td>
<td>Strong</td>
</tr>
<tr>
<td></td>
<td>Insufficient evidence to determine net benefits or risks</td>
</tr>
</tbody>
</table>

*Adopted from the classification developed by the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) workgroup.

Cost Analysis

Published cost analyses were reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

This guideline was approved by the American College of Physicians (ACP) Board of Regents on November 17, 2012.

Recommendations

Major Recommendations

The strength of the evidence (high, moderate, low, or insufficient evidence to determine benefits or risks) and strength of recommendations (strong, weak) are defined at the end of the “Major Recommendations” field.

Recommendation 1: The American College of Physicians (ACP) recommends that all overweight and obese patients diagnosed with obstructive sleep apnea (OSA) should be encouraged to lose weight. (Grade: strong recommendation; low-quality evidence)

Obesity is a risk factor for OSA, and evidence showed that intensive weight-loss interventions help reduce Apnea-Hypopnea Index (AHI) scores and improve OSA symptoms. Weight loss is also associated with many other health benefits other than for OSA. Other factors, such as alcohol and opioid use, may be associated with adverse outcomes in patients with sleep apnea, but these factors were not addressed in the evidence review.

Recommendation 2: ACP recommends continuous positive airway pressure (CPAP) treatment as initial therapy for patients diagnosed with OSA. (Grade: strong recommendation; moderate-quality evidence)

In patients with excessive daytime sleepiness who have been diagnosed with OSA, CPAP is the most extensively studied therapy. This treatment has been shown to improve Epworth Sleepiness Scale (ESS) scores, reduce AHI and arousal index scores, and increase oxygen saturation. However, CPAP has not been shown to increase quality of life. Evidence on the effect of CPAP on cardiovascular disease, hypertension, and type 2 diabetes was insufficient. Studies have evaluated various alternative CPAP modifications. Fixed and auto-CPAP, as well as C-Flex, have similar adherence and efficacy. Data were insufficient to determine the comparative efficacy of other CPAP modifications. Greater AHI and ESS scores were associated with better adherence to CPAP.
Recommendation 3: ACP recommends mandibular advancement devices (MADs) as an alternative therapy to CPAP treatment for patients diagnosed with OSA who prefer MADs or for those with adverse effects associated with CPAP treatment. (Grade: weak recommendation; low-quality evidence)

Evidence showed that MADs have been used as an alternative to CPAP for treatment of OSA. Patients had AHI scores between 18 and 40 events per hour. Evidence to suggest which patients would benefit most from MADs was insufficient. However, MADs can be considered in patients with adverse effects or for those who do not tolerate or adhere to CPAP.

Definitions:

<table>
<thead>
<tr>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Strong</td>
</tr>
<tr>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Low</td>
<td>Strong</td>
</tr>
<tr>
<td></td>
<td>Benefits Clearly Outweigh Risks and Burden</td>
</tr>
<tr>
<td></td>
<td>Benefits Finely Balanced with Risks and Burden</td>
</tr>
</tbody>
</table>

*Adopted from the classification developed by the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) workgroup.

Clinical Algorithm(s)

None provided

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate interventions for obstructive sleep apnea (OSA), taking into account the relative benefits and risks associated with each intervention

Potential Harms

Evidence on adverse effects related to various management strategies for obstructive sleep apnea (OSA) was sparse, especially from randomized control trials (RCTs). The Appendix Table in the original guideline document summarizes adverse effects associated with each treatment. Tooth loosening, dental crown damage, and temporomandibular joint pain were the most commonly reported adverse effects with mandibular advancement devices (MADs); however, long-term consequences were not reported. Overall, approximately 5% to 15% of patients treated with continuous positive airway pressure (CPAP) reported adverse effects that they considered to be substantial, but these symptoms were potentially transient. In general, adverse effects in patients treated with CPAP could be alleviated with termination or modification of the treatment. No long-term adverse effects were reported for weight-loss interventions.

Qualifying Statements

Qualifying Statements

- Clinical practice guidelines are "guides" only and may not apply to all patients and clinical situations. Thus, they are not intended to override clinicians' judgment. All American College of Physicians (ACP) clinical practice guidelines are considered automatically withdrawn or invalid 5 years after publication, or once an update has been issued.
- The authors of this article are responsible for its contents, including any clinical or treatment recommendations. No statement in this article should be construed as an official position of the Department of Veterans Affairs.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Mobile Device Resources

Resources
Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need
- Getting Better
- Living with Illness

IOM Domain
- Effectiveness
- Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

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

Date Released
2013 Sep 24

Guideline Developer(s)
American College of Physicians - Medical Specialty Society

Source(s) of Funding
Financial support for the development of this guideline comes exclusively from the American College of Physicians (ACP) operating budget.

Guideline Committee
Clinical Guidelines Committee of the American College of Physicians

Composition of Group That Authored the Guideline
Primary Authors: Amir Qaseem, MD, PhD, MHA; Jon-Erik C. Holty, MD, MS; Douglas K. Owens, MD, MS; Paul Dallas, MD; Melissa Starkey, PhD; and Paul Shekelle, MD, PhD
Clinical Guidelines Committee of the American College of Physicians: Paul Shekelle, MD, PhD (Chair); Roger Chou, MD; Molly Cooke, MD; Paul Dallas, MD; Thomas D. Denberg, MD, PhD; Nick Fitterman, MD; Mary Ann Forcina, MD; Robert H. Hopkins Jr., MD; Linda L. Humphrey, MD, MPH; Tanveer P. Mir, MD; Douglas K. Owens, MD, MS; Holger J. Schünemann, MD, PhD; Donna E. Sweet, MD; David S. Weinberg, MD, MSc; and Timothy Wilt, MD, MPH

Financial Disclosures/Conflicts of Interest
Potential Conflicts of Interest
Dr. Shekelle: Personal fees: ECRI Institute, Veterans Affairs; Grants: Agency for Healthcare Research and Quality, Veterans Affairs, Centers for Medicare & Medicaid Services, National Institute of Nursing Research, Office of the National Coordinator for Health Information Technology. All other authors have no disclosures.

Disclosures are available on the American College of Physicians Web site. A record of conflicts of interest is kept for each Clinical Guidelines Committee meeting and conference call and is also available from the American College of Physicians Web site.

Guideline Status
This is the current release of the guideline.
This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability
Electronic copies: Available from the Annals of Internal Medicine Web site.
Print copies: Available from the American College of Physicians (ACP), 190 N. Independence Mall West, Philadelphia PA 19106-1572.

Availability of Companion Documents
The following are available:


Print copies: Available from the American College of Physicians (ACP), 190 N. Independence Mall West, Philadelphia PA 19106-1572.

A collection of Recommendation Summaries for all current American College of Physicians Clinical Guidelines is now available for Personal Digital Assistant (PDA) download from the ACP Web site.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on December 12, 2013.

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-criteria.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.