Complete Summary

GUIDELINE TITLE

NIH State-of-the-Science Conference Statement on manifestations and management of chronic insomnia in adults.

BIBLIOGRAPHIC SOURCE(S)

NIH State-of-the-Science Conference Statement on manifestations and management of chronic insomnia in adults. NIH Consens State Sci Statements 2005 Jun 13-15;22(2):1-30. PubMed

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Chronic insomnia

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Family Practice
Geriatrics
Internal Medicine
Neurology
Psychiatry
Psychology
Sleep Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Nurses
Patients
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide health care providers, patients, and the general public with a responsible assessment of currently available data on manifestations and management of chronic insomnia in adults

TARGET POPULATION

Patients diagnosed with or displaying symptoms of chronic insomnia for 30 days or more including:

- Difficulty in initiating sleep
- Difficulty in maintaining sleep
- Waking up too early

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation/Diagnosis

1. Clinical interview
2. Medical history/physical examination including possible use of:
    - Sleep diaries
    - Questionnaires
    - Actigraph
    - Polysomnography
3. Assessment of risk factors and co-morbid conditions

Treatment/Management

1. Behavioral and cognitive therapies
2. Prescription medications
    - Benzodiazepine receptor agonists

- Prescription drugs used without the Food and Drug Administration (FDA) Approval (considered but not recommended)
    - Antidepressants
    - Other prescription medications (barbiturates; antipsychotics)
- Non-prescription medications, including alcohol, melatonin, valerian, and L-tryptophan (considered but not recommended)
- Other treatments such as tai chi, yoga, acupuncture, and light therapy

MAJOR OUTCOMES CONSIDERED

- How is chronic insomnia defined, diagnosed, and classified, and what is known about its etiology?
- What are the prevalence, natural history, incidence, and risk factors for chronic insomnia?
- What are the consequences, morbidities, co-morbidities, and public health burden associated with chronic insomnia?
- What treatments are used for the management of chronic insomnia, and what is the evidence regarding their safety, efficacy, and effectiveness?
- What are important future directions for insomnia related research?

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Note from the National Guideline Clearinghouse (NGC): A systematic review of the literature was prepared by the University of Alberta Evidence-based Practice Center (EPC) for the Agency for Healthcare Research and Quality (AHRQ) for use by the National Institutes of Health (NIH) (see the "Availability of Companion Documents" field).

Literature Search

The research librarian, in collaboration with the TEP (Technical Expert Panel), developed and implemented search strategies designed to identify relevant evidence for key questions of the review. A systematic search of 21 electronic databases was conducted. EPC staff searched MEDLINE®, EMBASE, CINAHL®, Ovid MEDLINE® In-Process & Other Non-Indexed Citations, Ovid OLDMEDLINE®, PsycINFO®, EBM Reviews-Cochrane Central Register of Controlled Trials, International Pharmaceutical Abstracts, AMED (Allied and Complementary Medicine), HealthSTAR/Ovid Healthstar, EBM Reviews-Cochrane Database of Systematic Reviews (CDSR), ACP Journal Club (ACPJC), Database of Abstracts of Reviews of Effects (DARE), Science Citation Index Expanded™, Biological Abstracts, Cochrane Complementary Medicine Field Registry, CAB Abstracts, SIGLE, OCLC Proceedings First, Dissertation Abstracts, Alt HealthWatch, NLM Gateway, and PubMed®. Most of the searches were limited to humans, and no age restrictions were applied to any of the searches.

For Question 1, which relates to the definition, classification, diagnosis, and aetiology of chronic insomnia in adults, EPC staff searched for narrative and systematic reviews, book chapters, diagnostic manuals and standards of practice parameters, and applied English-language restrictions. For Question 2, which relates to the prevalence, natural history, incidence, and risk factors for chronic insomnia in adults, and Question 3, which relates to the consequences, morbidities, co-morbidities and public health burden associated with chronic insomnia in adults, EPC staff searched for observational studies, encompassing a range of designs including cross-sectional, case-control, and cohort studies, and applied English-language restrictions. For Question 4, which relates to the treatments for chronic insomnia in adults, and the evidence regarding their safety, efficacy, and effectiveness, we searched for randomized controlled trials, and no language restrictions were applied.

Inclusion Criteria

EPC staff did not develop formal inclusion criteria for the question pertaining to the definition, classification, diagnosis, and etiology of chronic insomnia (Question 1), nor for the question pertaining to the future direction of insomnia-related research (Question 5). The former question was answered by providing an overview of the literature, and the latter question was answered by assessing the limitations in the evidence for the other questions of the review.

Inclusion criteria were developed for three questions of the review (Questions 2-4). Question-specific inclusion criteria appear below. In the interest of clarity, questions 2 and 3 will be referred to as the questions on manifestations of chronic insomnia, while question 4 will be referred to as the question on management of chronic insomnia.

2. **What are the prevalence, natural history, incidence, and risk factors for chronic insomnia?** Specific risk factors of interest include age, gender, race/ethnicity, psychiatric illness and psychological problems, medical disease, socioeconomic status, and shift work.

A study was considered to be relevant to the portion of Question 2 pertaining to the prevalence, natural history, and incidence of chronic insomnia, if it met the following criteria:

- The report was written in English
- Participants were at least 15 years old
- It examined chronic insomnia
- It had a cross-sectional or cohort design
- It assessed the prevalence, natural history, or incidence of chronic insomnia

A study was considered to be relevant to the portion of Question 2 pertaining to risk factors for chronic insomnia, if it met the first three criteria listed above as well as the following:

- It had a cohort, case-control, or cross-sectional design
- It assessed one of the risk factors of interest

3. **What are the consequences, morbidities, comorbidities, and public health burden associated with chronic insomnia?** Specific outcomes of interest include healthcare utilization, psychiatric illness, absenteeism, work performance, accidents, falls in the elderly, quality of life and social relationships, memory, cognitive function, mood, and direct and indirect costs.

A study was considered to be relevant to this question of the review, if it met the first three criteria outlined for Question 2 as well as the following:

- It had a cohort or cross-sectional design
- It assessed one of the consequences of interest

For Questions 2 and 3, a study was considered to examine chronic insomnia if this condition was defined as a sleep disturbance of four weeks or more or the report explicitly mentioned that chronic sleep disturbance was examined.

4. **What treatments are used for the management of chronic insomnia and what is the evidence regarding their safety, efficacy, and effectiveness?** Specific treatments of interest include prescription medication, over-the-counter medication, alcohol, behavioral therapy, combination therapy, and complementary and alternative care.

A study was considered to be relevant to this question of the review, if it met the following criteria:

- The report was written in English
- Participants were at least 15 years old, and the majority were at least 18 years old
- Participants suffered from chronic insomnia
- Participants were randomized to intervention or placebo
- Participants and assessors were blind to treatment received
- It assessed at least one of the following outcomes, listed in order of importance in deriving conclusions of the review:
    - Sleep onset latency
    - Wakefulness after sleep onset
    - Sleep efficiency
    - Total sleep time
    - Sleep quality
    - Quality of life

Sleep onset latency was defined as the amount of time between the participant laying down to sleep and the onset of sleep; wakefulness after sleep onset was defined as the amount of time spent awake in bed following the attainment of sleep; sleep efficiency was defined as the amount of time spent asleep as a percentage of the total time spent in bed; and total sleep time was defined as the total time spent asleep while in bed. Sleep onset latency and wakefulness after sleep onset were given the highest priority in deriving conclusions from the review, since they were considered the best indices of sleep initiation and sleep maintenance, respectively. However, subgroup analyses were conducted only on data relevant to sleep onset latency, since this outcome was the most highly reported outcome across studies.

If the majority of participants met one of the following criteria, the study population was considered to suffer from chronic insomnia:

- Participants suffered from a sleep disturbance of four weeks or more.
- Participants were described as having a chronic/longstanding/persistent sleep disturbance.
- Participants were selected from a sleep disorders clinic.

In the case of combination therapy, the combined treatment could be compared to either placebo or single treatment.

EPC staff acknowledged the fact that double-blinding is often not feasible in studies of psychological treatments by not requiring double-blinding in these studies for inclusion in the review. The placebo treatment for relaxation therapy and cognitive behavioral therapy was minimal treatment, such as sleep hygiene recommendations or minimal instruction. EPC staff required that the placebo resemble the intervention of the study except that it was known to produce either no effect or only a minimal effect.

Study Selection

In the first stage of study selection, two reviewers screened the titles and abstracts of all potentially relevant articles, independently. Each reviewer noted the titles and abstracts that were potentially relevant to the review, and these articles were retrieved. In the second stage of study selection, two reviewers appraised the potentially relevant articles, independently, using pre-determined, question-specific, inclusion criteria. Disagreements between reviewers were resolved by discussion and consensus. The rate of disagreement between reviewers and the primary reason for exclusion of potentially relevant articles were noted.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Meta-Analysis
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Note from the National Guideline Clearinghouse (NGC): A systematic review of the literature was prepared by the University of Alberta Evidence-based Practice Center (EPC) for the Agency for Healthcare Research and Quality (AHRQ) for use by the National Institutes of Health (NIH) (see the "Availability of Companion Documents" field).

Data Extraction

Data relevant to study design, population, interventions, and outcomes were extracted from studies, as appropriate, using standardized data extraction forms. A trained reviewer extracted relevant data, and a second reviewer verified the data extracted for accuracy and completeness.

Assessment of Study Quality

The quality of studies relevant to the questions on manifestations of chronic insomnia was assessed using one of three instruments; studies on prevalence and incidence were assessed using a scale designed specifically for this purpose. All other studies relevant to manifestations of chronic insomnia were assessed using one of two Newcastle-Ottawa scales (unpublished), each scale specific to either cohort or case-control studies.

The quality of studies relevant to management of chronic insomnia was assessed using the Jadad scale. The concealment of allocation of participants to treatment groups was also assessed.

Data Analysis

Data relevant to manifestations of chronic insomnia were analyzed qualitatively, while data relevant to management of chronic insomnia were analyzed quantitatively.

Manifestations of Chronic Insomnia

For the questions on prevalence, natural history, incidence, risk factors, and consequences of chronic insomnia, data relevant to each variable were analyzed separately, except for data relevant to potential risk factors and potential consequences of chronic insomnia, which were analyzed together as associated factors of chronic insomnia. The data were synthesized to provide a description of the methods and results of the studies relevant to a given variable.

Management of Chronic Insomnia

For continuous outcomes (e.g., sleep onset latency and sleep efficiency), studies were combined using a mean difference (MD), with the exception of sleep quality and quality of life, where studies were combined using a standardized mean difference (SMD). Dichotomous outcomes (i.e., safety outcomes) were combined using a risk difference (RD). A number needed to harm (NNH) was also reported for any safety outcomes that were found to be statistically significant. The Inverse Variance Method was used to weight the studies. An efficacy estimate, with

corresponding 95% confidence interval, was computed for each outcome. All meta-analyses were performed using a Random Effects Model.

For some outcomes (sleep onset latency and number of adverse events), treatment categories were compared indirectly, via their relationship to placebo. Differences of differences with 95% confidence intervals (CI) were computed.

All estimates of efficacy were assessed for heterogeneity using the I-squared statistic. For the primary outcome (sleep onset latency), heterogeneity was explored in subgroup and sensitivity analyses using a number of variables (treatment, presence/absence of psychiatric illness, length of treatment, age, gender and study quality). Deeks' chi-square statistic was used to test for significant heterogeneity reduction in partitioned subgroups.

EPC tested for publication bias visually using the Funnel Plot and quantitatively using the Rank Correlation Test, the Graphical Test, and the Trim and Fill Method.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Consensus Development Conference)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The National Institute of Mental Health and the Office of Medical Applications of Research of the National Institutes of Health (NIH) sponsored a State-of-the-Science Conference on the Manifestations and Management of Chronic Insomnia in Adults on June 13 to 15, 2005, in Bethesda, MD. During the first 2 days of the conference, experts presented the latest scientific knowledge about chronic insomnia and available treatments. After weighing all of the scientific evidence, an independent panel prepared and presented the following state-of-the-science statement.

The independent panel was charged with answering five specific questions:

- How is chronic insomnia defined, diagnosed, and classified, and what is known about its etiology?
- What are the prevalence, natural history, incidence, and risk factors for chronic insomnia?
- What are the consequences, morbidities, comorbidities, and public health burden associated with chronic insomnia?
- What treatments are used for the management of chronic insomnia, and what is the evidence regarding their safety, efficacy, and effectiveness?
- What are important future directions for insomnia related research?

The conference was intended for health care professionals, researchers, patients and their families, and members of the public interested in the nature of and available treatments for chronic insomnia. The conference included formal expert presentations focusing on the individual conference questions and oral and written input from professionals and members of the lay public. In addition, the

independent panel benefited greatly from a comprehensive systematic literature review, prepared by the University of Alberta Evidence-based Practice Center.

Answering pre-determined questions, the panel drafted its statement based on scientific evidence presented in open forum and on the published scientific literature. The draft statement was read in its entirety on the final day of the conference and circulated to the audience for comment.

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 met in executive session to consider the comments received, and released a revised statement later that day at http://www.consensus.nih.gov.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Chronic insomnia is a major public health problem affecting millions of individuals, along with their families and communities. Little is known about the mechanisms, causes, clinical course, comorbidities, and consequences of chronic insomnia. Evidence supports the efficacy of cognitive-behavioral therapy and benzodiazepine receptor agonists in the treatment of this disorder, at least in the short term. Very little evidence supports the efficacy of other treatments, despite their widespread use. Moreover, even for those treatments that have been systematically evaluated, the panel is concerned about the mismatch between the potential lifelong nature of this illness and the longest clinical trials, which have lasted 1 year or less. A substantial public and private research effort is warranted, including developing research tools and conducting longitudinal studies of randomized clinical trials. Finally, there is a major need for educational programs directed at physicians, health care providers, and the public.

Diagnosis

Diagnosis is based primarily on patient-derived and family or caregiver complaints, as determined by the clinical interview. However, there has been little research to show how accurately persons reporting sleep problems can judge their

own sleep latency or periods of wakefulness during the night. Medical history and physical examination are useful in establishing the presence of comorbid syndromes.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate management of chronic insomnia in adults

POTENTIAL HARMS

Benzodiazepine Receptor Agonists

Adverse effects associated with these medications include residual daytime sedation, cognitive impairment, motor incoordination, dependence, and rebound insomnia. These problems appear to be worse in the elderly. The frequency and severity of the adverse effects are much lower for the newer benzodiazepine receptor agonists, most likely because these agents have shorter half-lives. The available literature suggests that, in the short term, abuse of the benzodiazepine receptor agonists is not a major problem, but problems associated with their long-term use require further study in the general population of insomniacs.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The statement reflects the panel's assessment of medical knowledge available at the time the statement was written. Thus, it provides a "snapshot in time" of the state of knowledge on the conference topic. When reading the statement, keep in mind that new knowledge is inevitably accumulating through medical research.
- This statement is an independent report of the panel and is not a policy statement of the National Institutes of Health (NIH) or the Federal Government. This statement and all past statements from the NIH Consensus Development Program are available at the same web address of http://www.consensus.nih.gov.

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
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

NIH State-of-the-Science Conference Statement on manifestations and management of chronic insomnia in adults. NIH Consens State Sci Statements 2005 Jun 13-15;22(2):1-30. PubMed

ADAPTATION

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

DATE RELEASED

2005 Jun

GUIDELINE DEVELOPER(S)

National Institutes of Health (NIH) State-of-the-Science Panel - Independent Expert Panel

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

National Institutes of Health (NIH) State-of-the-Science Panel

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All of the panelists who participated in this conference and contributed to the writing of this statement were identified as having no financial or scientific conflict of interest, and all signed forms attesting to this fact. Unlike the expert speakers who present scientific data at the conference, the individuals invited to participate on National Institutes of Health (NIH) Consensus and State-of-the-Science panels are reviewed prior to selection to assure that they are not proponents of an advocacy position with regard to the topic and are not identified with research that could be used to answer the conference questions.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the National Institutes of Health (NIH) Consensus Development Program Web site.

Print copies: Available from the NIH Consensus Development Program Information Center, PO Box 2577, Kensington, MD 20891; Toll free phone (in U.S.), 1-888-NIH-CONSENSUS (1-888-644-2667.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Buscemi N, Vandermeer B, Friesen C, Bialy L, Tubman M, Ospina M, Klassen TP, Witmans M. Manifestations and management of chronic insomnia in adults. Summary, Evidence Report/Technology Assessment No. 125 (Prepared by the University of Alberta Evidence-based Practice Center, under Contract No. C400000021). AHRQ Publication No. 05-E021-1. Rockville, MD: Agency for Healthcare Research and Quality. 2005 Jun. Available from the AHRQ Web site.
- Buscemi N, Vandermeer B, Friesen C, Bialy L, Tubman M, Ospina M, Klassen TP, Witmans M. Manifestations and management of chronic insomnia in adults. Evidence Report/Technology Assessment No. 125 (Prepared by the University of Alberta Evidence-based Practice Center, under Contract No. C400000021). AHRQ Publication No. 05-E021-2. Rockville, MD: Agency for Healthcare Research and Quality. 2005 Jun. Available from the AHRQ Web site.

PATIENT RESOURCES

None available

NGC STATUS

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