



Complete Summary

GUIDELINE TITLE

Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with acute headache.

BIBLIOGRAPHIC SOURCE(S)

Edlow JA, Panagos PD, Godwin SA, Thomas TL, Decker WW, American College of Emergency Physicians. Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with acute headache. *Ann Emerg Med* 2008 Oct;52(4):407-36. [91 references] [PubMed](#)

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American College of Emergency Physicians (ACEP). Clinical policy: critical issues in the evaluation and management of patients presenting to the emergency department with acute headache. *Ann Emerg Med* 2002 Jan;39(1):108-22. [49 references]

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)

Acute nontraumatic headache

GUIDELINE CATEGORY

Diagnosis
Evaluation

Management
Risk Assessment

CLINICAL SPECIALTY

Emergency Medicine
Neurology
Radiology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To update the 2002 American College of Emergency Physicians clinical policy on the evaluation and management of patients presenting to the emergency department with acute headache
- To derive evidence-based recommendations to help clinicians answer the following 5 critical questions:
 1. Does a response to therapy predict the etiology of an acute headache?
 2. Which patients with headache require neuroimaging in the emergency department (ED)?
 3. Does lumbar puncture need to be routinely performed on ED patients being worked up for nontraumatic subarachnoid hemorrhage whose noncontrast brain computed tomography (CT) scans are interpreted as normal?
 4. In which adult patients with a complaint of headache can a lumbar puncture be safely performed without a neuroimaging study?
 5. Is there a need for further emergent diagnostic imaging in the patient with sudden-onset, severe headache who has negative findings in both CT and lumbar puncture?

TARGET POPULATION

Adult patients presenting to the emergency department (ED) with acute nontraumatic headache

Note: This guideline is not intended to address the care of pediatric patients or the care of patients with trauma-related headaches.

INTERVENTIONS AND PRACTICES CONSIDERED

1. Medical history and physical examination, including neurologic examination
2. Assessment of pain response to therapy (not recommended as the sole diagnostic indicator of the underlying etiology of an acute headache)
3. Lumbar puncture with cerebrospinal fluid (CSF) analysis (with and without a neuroimaging study)
4. Neuroimaging: head computed tomography (CT) scan with or without contrast; CT angiography; magnetic resonance imaging (MRI)
5. Risk assessment for lumbar puncture
6. Emergency Department discharge and follow-up

MAJOR OUTCOMES CONSIDERED

- Accuracy of response to analgesic for determining serious secondary cause of headache
- Sensitivity and predictive value of diagnostic neuroimaging for detecting brain pathology, especially subarachnoid hemorrhage
- Safety of performing a lumbar puncture (LP), contraindications to LP, and risk of adverse outcomes with LP
- Risk of herniation
- Incidence of subarachnoid hemorrhage or sudden death in patients with normal computed tomography (CT) and LP

METHODOLOGY

METHODS USED TO COLLECT/SELECT 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

Multiple searches of MEDLINE and the Cochrane database were performed. Specific key words/phrases used in the searches are identified under each critical question. To update the 2002 American College of Emergency Physicians (ACEP) policy, which used literature up to December 1999, all searches were limited to English-language sources, human studies, adults, and years January 2000 to August 2006. Additional articles were reviewed from the bibliography of articles cited and from published textbooks and review articles. Subcommittee members supplied articles from their own files, and more recent articles identified during the expert review process were also included.

See the original guideline document for words/phrases for literature searches associated with each clinical question reproduced in the "Guideline Objectives" field.

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

Strength of Evidence

Literature Classification Schema[^]

Design/ Class	Therapy*	Diagnosis**	Prognosis***
1	Randomized, controlled trial or meta-analyses of randomized trials	Prospective cohort using a criterion standard	Population prospective cohort
2	Nonrandomized trial	Retrospective observational	Retrospective cohort Case control
3	Case series Case report Other (e.g., consensus, review)	Case series Case report Other (e.g., consensus, review)	Case series Case report Other (e.g., consensus, review)

^Some designs (e.g., surveys) will not fit this schema and should be assessed individually.

*Objective is to measure therapeutic efficacy comparing ≥ 2 interventions.

**Objective is to determine the sensitivity and specificity of diagnostic tests.

***Objective is to predict outcome including mortality and morbidity.

*Approach to Downgrading Strength of Evidence**

	Design/Class		
Downgrading	1	2	3
None	I	II	III
1 level	II	III	X
2 levels	III	X	X
Fatally flawed	X	X	X

*See "Description of Methods Used to Analyze the Evidence" field for more information.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

This clinical policy was created after careful review and critical analysis of the medical literature.

All articles used in the formulation of this clinical policy were graded by at least 2 subcommittee members for strength of evidence and classified by the subcommittee members into 3 classes of evidence on the basis of the design of the study, with design 1 representing the strongest evidence and design 3 representing the weakest evidence for therapeutic, diagnostic, and prognostic clinical reports, respectively (see the "Rating Scheme for the Strength of Evidence" field). Articles were then graded on 6 dimensions thought to be most relevant to the development of a clinical guideline: blinded versus nonblinded

outcome assessment, blinded or randomized allocation, direct or indirect outcome measures (reliability and validity), biases (e.g., selection, detection, transfer), external validity (i.e., generalizability), and sufficient sample size. Articles received a final grade (Class I, II, III) on the basis of a predetermined formula, taking into account design and quality of study (see the "Rating Scheme for the Strength of Evidence" field). Articles with fatal flaws were given an "X" grade and not used in formulating recommendations in this policy. Evidence grading was done with respect to the specific data being extracted and the specific critical question being reviewed. Thus, the level of evidence for any one study may vary according to the question, and it is possible for a single article to receive different levels of grading as different critical questions are answered. Question-specific level of evidence grading may be found in the Evidentiary Table included at the end of original guideline document.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The panel used the American College of Emergency Physicians (ACEP) clinical policy development process, including expert review, and is based on the existing literature; when literature was not available, consensus of emergency physicians was used.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Strength of Recommendations

Clinical findings and strength of recommendations regarding patient management were made according to the following criteria:

Strength of Recommendations

Level A recommendations. Generally accepted principles for patient management that reflect a high degree of clinical certainty (i.e., based on strength of evidence Class I or overwhelming evidence from strength of evidence Class II studies that directly address all of the issues).

Level B recommendations. Recommendations for patient management that may identify a particular strategy or range of management strategies that reflect moderate clinical certainty (i.e., based on strength of evidence Class II studies that directly address the issue, decision analysis that directly addresses the issue, or strong consensus of strength of evidence Class III studies).

Level C recommendations. Other strategies for patient management that are based on preliminary, inconclusive, or conflicting evidence, or, in the absence of any published literature, based on panel consensus.

There are certain circumstances in which the recommendations stemming from a body of evidence should not be rated as highly as the individual studies on which they are based. Factors such as heterogeneity of results, uncertainty about effect magnitude and consequences, strength of prior beliefs, and publication bias, among others, might lead to such a downgrading of recommendations.

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

Expert review comments were received from individual emergency physicians and from individual members of the American Association of Neurological Surgeons/Congress of Neurological Surgeons, the American Headache Society, and the Society for Academic Emergency Medicine. Their responses were used to further refine and enhance this policy; however, their responses do not imply endorsement of this clinical policy.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the strength of evidence (Class I-III) and strength of recommendations (Level A-C) are repeated at the end of the Major Recommendations.

1. Does a response to therapy predict the etiology of an acute headache?

Patient Management Recommendations

Level A recommendations. None specified.

Level B recommendations. None specified.

Level C recommendations. Pain response to therapy should not be used as the sole diagnostic indicator of the underlying etiology of an acute headache.

2. Which patients with headache require neuroimaging in the Emergency Department (ED)?

Patient Management Recommendations

Level A recommendations. None specified.

Level B recommendations.

1. Patients presenting to the ED with headache and new abnormal findings in a neurologic examination (e.g., focal deficit, altered mental status, altered cognitive function) should undergo emergent* noncontrast head computed tomography (CT).
2. Patients presenting with new sudden-onset severe headache should undergo an emergent* head CT.
3. Human immunodeficiency virus (HIV)-positive patients with a new type of headache should be considered for an emergent* neuroimaging study.

Level C recommendations. Patients who are older than 50 years and presenting with new type of headache but with a normal neurologic examination should be considered for an urgent** neuroimaging study.

*Emergent studies are those essential for a timely decision regarding potentially life-threatening or severely disabling entities.

3. **Does lumbar puncture need to be routinely performed on ED patients being worked up for nontraumatic subarachnoid hemorrhage whose noncontrast brain CT scans are interpreted as normal?**

Patient Management Recommendations

Level A recommendations. None specified.

Level B recommendations. In patients presenting to the ED with sudden-onset, severe headache and a negative noncontrast head CT scan result, lumbar puncture should be performed to rule out subarachnoid hemorrhage.

Level C recommendations. None specified.

4. **In which adult patients with a complaint of headache can a lumbar puncture be safely performed without a neuroimaging study?**

Patient Management Recommendations

Level A recommendations. None specified.

Level B recommendations. None specified.

Level C recommendations.

1. Adult patients with headache and exhibiting signs of increased intracranial pressure (e.g., papilledema, absent venous pulsations on fundoscopic examination, altered mental status, focal neurologic deficits, signs of meningeal irritation) should undergo a neuroimaging study before having a lumbar puncture.

2. In the absence of clinical findings suggestive of increased intracranial pressure, a lumbar puncture can be performed without obtaining a neuroimaging study. (Note: A lumbar puncture does not assess for all causes of a sudden severe headache).

5. Is there a need for further emergent diagnostic imaging in the patient with sudden-onset, severe headache who has negative findings in both CT and lumbar puncture?

Patient Management Recommendations

Level A recommendations. None specified.

Level B recommendations. Patients with a sudden-onset, severe headache who have negative findings on a head CT, normal opening pressure, and negative findings in cerebrospinal fluid (CSF) analysis do not need emergent angiography and can be discharged from the ED with follow-up recommended.

Level C recommendations. None specified.

Definitions:

Strength of Evidence

Literature Classification Schema[^]

Design/ Class	Therapy*	Diagnosis**	Prognosis***
1	Randomized, controlled trial or meta-analyses of randomized trials	Prospective cohort using a criterion standard	Population prospective cohort
2	Nonrandomized trial	Retrospective observational	Retrospective cohort Case control
3	Case series Case report Other (e.g., consensus, review)	Case series Case report Other (e.g., consensus, review)	Case series Case report Other (e.g., consensus, review)

[^]Some designs (e.g., surveys) will not fit this schema and should be assessed individually.

*Objective is to measure therapeutic efficacy comparing ≥ 2 interventions.

**Objective is to determine the sensitivity and specificity of diagnostic tests.

***Objective is to predict outcome including mortality and morbidity.

*Approach to Downgrading Strength of Evidence**

	Design/Class		
Downgrading	1	2	3
None	I	II	III
1 level	II	III	X
2 levels	III	X	X
Fatally flawed	X	X	X

*See "Description of Methods Used to Analyze the Evidence" field for more information.

Strength of Recommendations

Level A recommendations. Generally accepted principles for patient management that reflect a high degree of clinical certainty (i.e., based on strength of evidence Class I or overwhelming evidence from strength of evidence Class II studies that directly address all of the issues).

Level B recommendations. Recommendations for patient management that may identify a particular strategy or range of management strategies that reflect moderate clinical certainty (i.e., based on strength of evidence Class II studies that directly address the issue, decision analysis that directly addresses the issue, or strong consensus of strength of evidence Class III studies).

Level C recommendations. Other strategies for patient management that are based on preliminary, inconclusive, or conflicting evidence, or, in the absence of any published literature, based on panel consensus.

There are certain circumstances in which the recommendations stemming from a body of evidence should not be rated as highly as the individual studies on which they are based. Factors such as heterogeneity of results, uncertainty about effect magnitude and consequences, strength of prior beliefs, and publication bias, among others, might lead to such a downgrading of recommendations.

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

Safe and timely evaluation and management of patients presenting to the emergency department (ED) with acute, nontraumatic headache.

POTENTIAL HARMS

Diagnostic procedures can result in adverse effects. For example, lumbar puncture can result in herniation.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This policy is not intended to be a complete manual on the evaluation and management of adult patients with acute headache but rather a focused examination of critical issues that have particular relevance to the current practice of emergency medicine.
- It is the goal of the Clinical Policies Committee to provide an evidence-based recommendation when the medical literature provides enough quality information to answer a critical question. When the medical literature does not contain enough quality information to answer a critical question, the members of the Clinical Policies Committee believe that it is equally important to alert emergency physicians to this fact.
- Recommendations offered in this policy are not intended to represent the only diagnostic and management options that the emergency physician should consider. The American College of Emergency Physicians (ACEP) clearly recognizes the importance of the individual physician's judgment. Rather, this guideline defines for the physician those strategies for which medical literature exists to provide support for answers to the crucial questions addressed in this policy.

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

IOM DOMAIN

Effectiveness
Safety
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Edlow JA, Panagos PD, Godwin SA, Thomas TL, Decker WW, American College of Emergency Physicians. Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with acute headache. *Ann Emerg Med* 2008 Oct;52(4):407-36. [91 references] [PubMed](#)

ADAPTATION

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

DATE RELEASED

2002 (revised 2008 Oct)

GUIDELINE DEVELOPER(S)

American College of Emergency Physicians - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Emergency Physicians

GUIDELINE COMMITTEE

Clinical Policies Subcommittee (Writing Committee)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Clinical Policies Subcommittee (Writing Committee): Jonathan A. Edlow, MD (Chair); Peter D. Panagos, MD; Steven A. Godwin, MD; Tamara L. Thomas, MD; Wyatt W. Decker, MD

American College of Emergency Physicians Clinical Policies Committee (Oversight Committee): Andy S. Jagoda, MD (Chair 2003-2006, Co-Chair 2006-2007); Wyatt W. Decker, MD (Co-Chair 2006-2007, Chair 2007-2008); Deborah B. Diercks, MD; Barry M. Diner, MD (Methodologist); Jonathan A. Edlow, MD; Francis M. Fesmire, MD; John T. Finnell, II, MD, MSc (Liaison for Emergency Medical Informatics Section 2004-2006); Steven A. Godwin, MD; Sigrid A. Hahn, MD; John M. Howell, MD; J. Stephen Huff, MD; Eric J. Lavonas, MD; Thomas W. Lukens, MD, PhD; Donna L. Mason, RN, MS, CEN (ENA Representative 2004-2006); Edward Melnick, MD (EMRA Representative 2007-2008); Anthony M. Napoli, MD (EMRA Representative 2004-2006); Devorah Nazarian, MD; AnnMarie Papa, RN, MSN, CEN, FAEN (ENA Representative 2007-2008); Jim Richmann, RN, BS, MA(c), CEN (ENA Representative 2006-2007); Scott M. Silvers, MD; Edward P. Sloan, MD, MPH; Molly E. W. Thiessen, MD (EMRA Representative 2006-2008); Robert L. Wears, MD, MS (Methodologist); Stephen J. Wolf, MD; Cherri D. Hobgood, MD (Board Liaison 2004-2006); David C. Seaberg, MD, CPE (Board Liaison 2006-2008); Rhonda R. Whitson, RHIA, Staff Liaison, Clinical Policies Committee and Subcommittees

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Relevant industry relationships of subcommittee members: There were no relevant industry relationships disclosed by the subcommittee members.

Relevant industry relationships are those relationships with companies associated with products or services that significantly impact the specific aspect of disease addressed in the critical question.

ENDORSER(S)

Emergency Nurses Association - Medical Specialty Society

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American College of Emergency Physicians (ACEP). Clinical policy: critical issues in the evaluation and management of patients presenting to the emergency department with acute headache. Ann Emerg Med 2002 Jan;39(1):108-22. [49 references]

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [American College of Emergency Physicians Web site](#).

Print copies: Available from the American College of Emergency Physicians, P.O. Box 619911, Dallas, TX 75261-9911, or call toll free: (800) 798-1822.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on January 29, 2003. The information was verified by the guideline developer on March 13, 2003. This summary was updated by ECRI Institute on November 12, 2008. The updated information was verified by the guideline developer on December 5, 2008.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions. For more information, please refer to the [American College of Emergency Physicians \(ACEP\) Web site](#).

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: 12/29/2008

