Complete Summary

GUIDELINE TITLE

Implementation strategies for emergency medical services within stroke systems of care: A policy statement from the American Heart Association/American Stroke Association expert panel on emergency medical services systems and the Stroke Council.

BIBLIOGRAPHIC SOURCE(S)

Acker JE 3rd, Pancioli AM, Crocco TJ, Eckstein MK, Jauch EC, Larrabee H, Meltzer NM, Mergendahl WC, Munn JW, Prentiss SM, Sand C, Saver JL, Eigel B, Gilpin BR, Schoeberl M, Solis P, Bailey JR, Horton KB, Stranne SK, American Heart Association, American Stroke Association Expert Panel on Emergency Medical Services Systems. Implementation strategies for emergency medical services within stroke systems of care: a policy statement from the American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council. Stroke 2007 Nov;38(11):3097-115. [146 references] 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
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Stroke

GUIDELINE CATEGORY

Management

CLINICAL SPECIALTY

Cardiology
Critical Care
Emergency Medicine
Neurology

INTENDED USERS

Emergency Medical Technicians/Paramedics
Hospitals
Nurses
Physicians
Public Health Departments
Utilization Management

GUIDELINE OBJECTIVE(S)

To examine the challenges associated with integrating emergency medical services (EMS) activation and response within stroke systems of care and to identify both performance measures and resources to address these challenges

TARGET POPULATION

Suspected stroke patients

INTERVENTIONS AND PRACTICES CONSIDERED

1. Ensuring rapid access to emergency medical services (EMS) for acute stroke patients
    - Ensuring rapid access to enhanced landline and wireless 9-1-1
    - Ensuring that EMS communicators recognize stroke signs and symptoms reported by callers
    - Ensuring that EMS communicators use emergency medical dispatch guidelines reflecting current American Stroke Association. American Heart Association guidelines
2. Ensuring effective response of EMS systems (EMSS)
    - Ensuring that EMS responders use validated screening algorithms effectively
    - Establishing goals for EMSS response time
3. Ensuring effective collaboration among prehospital and hospital providers in the care of stroke patients and the development of EMS training and protocols
    - Promoting ongoing collaboration among prehospital and hospital providers
    - Developing and implementing collaborative stroke education activities
    - Developing collaborative transport protocols
    - Engaging in collaborative continuous quality improvement processes
4. Ensuring that EMSS transport patients to the nearest stroke center or closest hospital for evaluation
    - Assessing stroke patient eligibility for acute stroke therapies using a stroke history checklist or algorithm

- Establishing EMSS transport destination protocols that reflect optimal patient care
- Establishing protocols for transfer of stroke patients from nonstroke center hospital to stroke centers
- Transport of stroke patient to stroke-ready hospital regardless of patients' geopolitical location

MAJOR OUTCOMES CONSIDERED

- Dispatch time: time from receipt of call to emergency medical services (EMS) dispatch
- Turnout time: time from EMS notification to vehicle movement
- Travel time: time to reach the patient
- On-scene time: time spent with patient before start of transport

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases
Searches of Unpublished Data

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The literature review included the use of Medline and other electronic databases to identify articles, government studies, and reports published by the emergency medical services (EMS) community between January 1994 and April 2006. The Expert Panel also reviewed preliminary survey information compiled by the American Stroke Association (ASA) regarding the strategies used and challenges faced by various states and communities in establishing stroke systems of care. Members of the Expert Panel identified additional resources.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

In 2006, the American Stroke Association (ASA) convened a multidisciplinary group, the ASA's Expert Panel on Emergency Medical Services (EMS), to examine in greater detail the 2004 Task Force's recommendations involving emergency medical services systems (EMSS). The Expert Panel examined the challenges associated with integrating EMS activation and response within stroke systems of care and identified both performance measures and resources to address these challenges.

The ASA's Expert Panel comprises nationally recognized experts in the areas of stroke care, EMS, emergency medicine, and healthcare policy development. Under the direction of the Expert Panel, ASA/American Heart Association (AHA) staff and HealthPolicy R&D (a policy research firm in Washington, DC, affiliated with the law firm of Powell Goldstein LLP) conducted a review of the clinical and health policy literature relevant to the activation and response of EMSS for stroke.

Members of the Expert Panel participated in a series of teleconferences and other communications to draft the content of these recommendations.

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

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Expert peer review of American Heart Association (AHA) Scientific Statements is conducted at the AHA National Center.

This statement was approved by the AHA Science Advisory and Coordinating Committee on July 13, 2007.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

For Activating and Dispatching the Emergency Medical Services (EMS) Response for Stroke Patients, Stroke Systems Should Require Appropriate Processes That Ensure Rapid Access to EMS for Acute Stroke Patients

Stroke systems should address the following 3 issues to help ensure that stroke patients have rapid access to EMS.

Locate Acute Stroke Patients Rapidly by Ensuring That the Public Has Access to Enhanced Landline (E) and Wireless (W) 9-1-1

- Advocate for funding and legislation at the federal, state, and local levels to provide universal availability of W-E911 capabilities.
- Support public policy initiatives and other activities that promote increased quality and appropriate use of 9-1-1 systems.
- Identify political leaders or champions for rural areas in the state and advocate for funding on behalf of 9-1-1 call centers and wireless carriers that serve rural areas.
- Advocate for the adoption of legislation that will require multiline telephone systems (MLTS) to provide 9-1-1 call centers with sufficient information to locate callers.
- Advocate for the Federal Communications Commission (FCC) to disallow or limit waivers of the rules that require wireless carriers to develop and implement the capabilities necessary to provide caller number and location information to emergency medical systems (EMS) communicators. In addition, advocate for the FCC to enforce compliance with the existing federal requirements for voice-over-internet protocol (VoIP) providers and to develop requirements for portable VoIP services.
- Consider collaborating with in-vehicle services, which locate the caller as well as provide an operator intercept for emergency calls.

Identify Acute Stroke Patients Rapidly and Accurately by Ensuring That EMS Communicators Recognize Stroke Signs and Symptoms as Reported by Callers

- Use stroke educational materials and 1 or more stroke experts (physicians, nurses, emergency medical technicians (EMTs), and paramedics) to provide education to EMS communicators about the signs and symptoms of stroke. These educational materials should reflect current published American Stroke Association/American Heart Association (ASA/AHA) recommended guidelines for emergency cardiovascular care.
- Ensure emergency medical services systems (EMSS) emergency medical dispatch (EMD) guide cards and educational resources are stroke-specific. Such guide cards and educational resources are available within the EMSS community.

Dispatch the Highest Level of Care Available to Suspected Stroke Patients in the Shortest Time Possible by Ensuring That EMS Communicators Use Emergency Medical Dispatch Guidelines Reflecting the Current ASA/AHA Guidelines

- Review dispatch guidelines used by all 9-1-1 call centers within the stroke system to ensure that the highest-priority response is given to callers with signs and symptoms of stroke. Revise guidelines that are incompatible with this priority response principle.
- Promote the use of nationally recognized emergency medical dispatch guidelines reflecting current ASA/AHA recommendations for stroke care among the 9-1-1 dispatch agencies within the stroke system of care. Work with the appropriate federal standard-setting organization for emergency medical dispatch (EMD) protocols— National Highway Traffic Safety Administration (NHTSA) and the American Society of Testing and Materials— to ensure that their standards include the appropriate guidelines for identification of and assistance with stroke patients.
- Advocate for funding for local 9-1-1 call centers to receive training and to acquire an EMD caller interrogation tool to help EMS communicators more effectively identify suspected stroke patients in the field.
- Work with the leading commercial providers of EMD protocol interrogation tools to ensure that their products meet ASA/AHA standards and guidelines for identifying and assisting stroke patients.
- Advocate for state legislation that establishes EMD guidelines consistent with federal guidelines as the standard of care.
- Establish targets for reducing the time-to-dispatch interval. These targets could be included as a component of certification and proficiency programs for EMS communicators.
- Advocate for local, state, federal, and third-party payer funding to ensure the availability of advanced life support (ALS) ambulances and paramedics across the stroke system's catchment area.
- Advocate for state and federal rules or standards to require that ALS units be equipped with electrocardiograph (ECG) monitoring devices and other resources necessary to properly care for stroke patients.
- Collaborate with organizations that provide services and assistance to non–English-speaking patients and callers to improve the ability of EMS communicators to communicate effectively with contacts who do not speak English as their primary language.
- Advocate for state and federal policymakers to support EMS personnel in rural areas to ensure the availability and quality of the emergency response system.

For EMS Responders, EMSS Should Use Protocols, Tools, and Training That Meet Current ASA/AHA Guidelines for Stroke Care

Stroke systems should address the following 2 issues to ensure the effective response of EMS within a stroke system of care.

Identify Acute Stroke Patients Rapidly and Accurately by Ensuring That EMS Responders Use Validated Screening Algorithms Effectively

- Ensure that EMS responders use validated stroke screening tools to aid in the identification of stroke patients.
- Advocate for consistent use of a single stroke screening tool at the community, state, or regional level, as appropriate, to improve the identification of stroke patients by EMS responders.

- Request that the medical directors of EMSS include a stroke screening tool in the protocols for prehospital stroke assessment and provide education on the use of the screening tool for all EMS personnel.
- Include stroke screening tools within the 10 core advanced cardiovascular life support (ACLS) cases when teaching both prehospital and hospital personnel.
- Request that all emergency department (ED) personnel who receive EMS prearrival patient reports obtain copies of the stroke screening tools for all suspected stroke patients.
- Implement continuous quality improvement (CQI) programs and iteratively improve the accuracy of stroke identifications made by prehospital personnel by comparing completed prehospital stroke screening forms with final hospital discharge diagnoses for stroke patients. EMSS need support and participation from hospitals in the quality assessment/quality initiatives process. Hospitals should report pertinent data back to EMSS, including mortality/morbidity and discharge diagnosis.
- Include research on the use of prehospital stroke severity scales or other triage factors as part of prehospital treatment trials that seek to evaluate the direct routing of certain stroke patients by ground or air ambulance to comprehensive stroke centers, or as part of other EMSS activities where the assessment and recognition of the severity of the stroke could be an important component of care.

Establish Goals for the EMSS Response Time for Suspected Stroke Patients

- Measure and report the overall EMSS response time and on-scene time for all stroke patients. Although the EMSS response time is 1 overall measurement parameter, the times for each component of the response time should be captured and reported to provide the EMSS with the data necessary to measure and improve overall response time performance. Often, precious time is lost during delays in the dispatch time and the turnout time.
- Measure and report additional response times for every element of the EMSS whenever possible. These response times include, but are not limited to, 9-1-1 call center processing time, the response times of first responders, basic life support response times, and the time spent to reach the patient.
- Work with the National EMS Information System (NEMSIS) project to recommend that states collect and submit all necessary data elements for stroke for inclusion in the national EMS dataset.
- For data elements absent from the NHTSA's national dataset, work with state EMS offices to ensure that the appropriate stroke elements are nonetheless captured in state datasets.
- Encourage EMSS to collect NHTSA-defined stroke data elements and use these data for continuing quality improvement (CQI) activities.

Prehospital Providers, Emergency Physicians, and Stroke Experts Should Collaborate in the Development of EMS Training, Assessment, Treatment, and Transportation Protocols for Stroke

Frequent and meaningful dialogue should occur among prehospital providers, EMS medical directors, ED medical and nursing directors, stroke center directors, and stroke neurologists about operational and CQI issues. Stroke systems should address the following 4 issues to help ensure that prehospital providers,

emergency medicine physicians and nurses, and stroke experts collaborate in the care of stroke patients and the development of EMS training and protocols.

Promote Ongoing Collaboration Among Prehospital and Hospital Providers in the Acute Treatment of Stroke Patients

- Integrate EMS within ED stroke care and ongoing CQI activities for stroke.
- Provide ongoing feedback to EMS providers who care for and transport stroke patients.
- Incorporate into EMSS protocol algorithms and checklists for the prearrival notification of the destination hospital for suspected stroke patients, and include prearrival notification as a component of EMS training and continuing education courses for stroke. In addition, review the use of prearrival notification for suspected stroke patients as a part of CQI activities within stroke systems of care.
- Incorporate mechanisms to garner participants' enthusiasm in collaborative activities (e.g., create newsletters to capitalize on successes or survey participants for ways to improve participation and attendance at collaborative meetings).
- Create a broad-based coalition of healthcare providers, experts, and regulators to develop improved EMSS processes and protocol enhancements.
- Urge stroke centers and EMS personnel to collaborate in stroke system research projects as appropriate.

Develop and Implement Stroke Education Activities Collaboratively With Prehospital and Hospital Providers, Including Initial as Well as Continuing Education

- Encourage prehospital providers, emergency physicians, and stroke experts to collaborate in evaluating the evidence for quality stroke care, writing stroke guidelines, and developing stroke training materials and programs.
- Encourage stroke system leaders to determine and facilitate the education needed by EMS personnel to provide optimal care for patients with stroke. EMS medical directors should proactively define the frequency of stroke reeducation on the basis of factors such as the prevalence of stroke care within the EMSS so that skill sets are maintained over time.
- Work with agencies that oversee EMS to ensure that the regulations include adequate requirements for evidence-based stroke training.
- Advocate for funding of professional education training for prehospital providers.
- Advocate for a stroke training requirement for the renewal of EMS responders' licensure.
- Collaborate with professional organizations, such as nursing associations, to provide stroke training and educational opportunities at conferences.
- Ensure that stroke experts are available to help teach the 10 core ACLS cases and to promote the use among providers of computer- and video-based self-directed learning and other training resources.

Develop Stroke System Transport Protocols Collaboratively With Prehospital and Hospital Providers, as Well as With Other Stakeholders

- Obtain support for updated stroke transport protocols from key EMSS, medical, and clinical leaders in the community. Leverage resources of stroke system members to update stroke protocols, such as ambulance electronic run sheets, professional education, CQI activities, and public education. Collaborate with state, regional, and community agencies to modify transport policies for stroke treatment and transport.
- Establish a hospital identification system that provides a transparent list of hospitals that meet standard criteria for primary stroke centers within the stroke system of care. Such a list should be readily available to EMS providers and the public.
- Create a broad-based coalition of healthcare providers, experts, and regulators to develop improved EMSS point-of-entry (transport destination) plans.
- Partner with professional organizations to more effectively communicate with prehospital and hospital providers the evidence supporting current treatment recommendations. Form alliances with professional organizations and advocate for the statewide adoption of transport protocols for stroke.
- Ensure that all available EMS transportation resources are considered for suspected stroke patients to minimize transport time to the appropriate hospital.
- Recognize air transport in the collaborative development of stroke transport protocols.
- Develop relationships with critical care transport (CCT) and ALS interfacility transfer resources to provide for the rapid transfer of patients to more appropriate hospitals when indicated.
- Standardize equipment (including hospital and EMS equipment, such as infusion pumps) and/or cross-train transport personnel in CCT and ALS interfacility transfer procedures to increase available resources for the rapid transfer of patients to more appropriate hospitals when indicated.
- Educate providers to treat the transfer of stroke patients for stroke interventions as a true emergency and eliminate the mindset of characterizing CCT and ALS interfacility transfers as non-emergency transports.
- Develop and measure response time parameters for CCT and ALS interfacility transfers in a manner similar to the measurement of traditional emergency response times.
- Use helicopter transport in cases where resource constraints would adversely affect EMS ground availability.
- Work with state EMS medical director associations, the state chapter of the American College of Emergency Physicians, and the ASA to come to a consensus on common stroke training, triage, and transport protocols.

Engage Collaboratively With Prehospital and Hospital Providers in Continuous Quality Improvement Processes for Stroke Care While Complying With Protections for the Privacy of Personal Health Information

- Ensure active participation by prehospital and hospital providers in the development and ongoing implementation of CQI activities. Include stroke experts in reviewing the prehospital care received by every stroke patient as part of CQI activities.
- Provide education about Health Insurance Portability and Accountability Act (HIPAA) to stroke system providers, including EMS providers and hospitals.

Encourage meaningful CQI activities while complying in full with federal and state law involving privacy issues.
- Develop model CQI agreements that address HIPAA concerns for EMSS, hospitals, and other providers within stroke systems.

Patients Should Be Transported to the Nearest Stroke Center for Evaluation and Care If a Stroke Center Is Located Within a Reasonable Transport Distance and Transport Time

Stroke systems should address the following 5 issues to help ensure that EMSS transport patients to the nearest stroke center or the closest hospital for evaluation as appropriate.

Assess Stroke Patient Eligibility for Acute Stroke Therapies Using a Stroke History Checklist or Algorithm Designed for Prehospital Personnel

- Develop and ensure the use of stroke triage and transport protocols that reflect current recommendations for assessing stroke patients for eligibility for acute stroke therapies, including thrombolytic therapy.
- Ensure that EMS responders have adequate education and training to screen patients accurately for acute therapies.

Establish EMSS Transport Destination Protocols That Reflect Optimal Patient Care With Transport to Stroke Centers as Appropriate

- Amend EMS transport destination protocols to place a greater priority on transporting patients to recognized stroke centers.
- Transport suspected stroke patients to the nearest stroke center that provides definitive treatment if such a hospital is within a reasonable transport time, taking into account regional issues such as availability of stroke centers and geography and whether transportation to a stroke center is possible within the appropriate time for acute therapeutic interventions. Alternatively, patients should be transported to the hospital considered to be best prepared to treat stroke patients on an emergency basis.
- Advocate for a statewide plan for EMS protocols to ensure stroke patients receive high-priority care at recognized stroke centers. Advocate for the development of a public statewide hospital identification system identifying hospitals that meet the criteria for primary or comprehensive stroke centers.
- Involve all affected hospital systems and EMS providers in the development of prehospital transport and triage protocols.
- Include stroke survivors and family members of stroke survivors on committees that develop stroke transport protocols to help mitigate the likelihood that patient destination may be manipulated for economic reasons.
- Advocate for local, state, and federal legislation to facilitate and reimburse for the care and transportation of stroke patients to stroke centers.
- Promote Joint Commission on Accreditation of Healthcare Organizations certification as well as other recognition programs that use similar quality-based outcome measurements.
- Encourage rural hospitals to enter into collaborative relationships with stroke centers to access expertise needed to initiate acute therapy before transporting patients to a stroke center.

- Advocate for funding for telestroke technologies and telestroke consultation services.
- Extend mutual aid agreements with neighboring EMSS agencies for trauma patients to include stroke patients, or establish mutual aid agreements for stroke patients to obtain assistance from neighboring EMSS where transport out of the area to a stroke center would leave portions of the community without adequate EMS coverage.

Establish Protocols for the Transfer of Stroke Patients From Nonstroke Center Hospitals to Stroke Centers as Appropriate

- Adopt goals for stroke patient arrival detailing initial evaluation and subsequent transfer with treatment at rural nonstroke center hospitals.
- Create community-wide guidelines for the interfacility transfer of stroke patients who are candidates for short-term therapies or who have conditions requiring more complex care.
- Provide stroke-specific education to assist providers in using system-wide interfacility transport protocols and in making medical decisions about when the benefits of transporting patients outweigh the risks in the context of stroke care and compliance with Emergency Medical Treatment and Active Labor Act (EMTALA) requirements.
- Use the trauma system as a model for stroke system development of transport and interfacility transfers.
- Develop model preestablished referral processes and interfacility transport agreements that reflect EMTALA requirements and any other state or local requirements. Create easy-to-complete forms that address such requirements that physicians can complete before patient transport.
- Advocate for the development of an interfacility transport component of EMS agencies.
- Advocate for the creation of model legislation to remove unnecessary legal and regulatory barriers to interfacility transfers.
- Develop for interfacility transfers a reverse transfer agreement, which returns the stroke patient after the receipt of acute care to the community hospital for subacute care and rehabilitation as appropriate.

Transport Stroke Patients to Stroke-Ready Hospitals Regardless of the Patients' Geopolitical Locations

- Educate state EMS office personnel and regional and local EMS officials regarding EMSS efforts and goals for the development of stroke systems of care.
- Identify key stakeholders involved in the development of state and regional trauma systems and discuss their experiences and "lessons learned" that are applicable to the development of stroke systems of care.
- Form a coalition to address the development of polices and regulations that are specific to patient destination with regard to the stroke patient. This coalition should include representatives of key stakeholder organizations, such as state EMS offices, regional and local EMS offices, the state legislature, the state chapter of the American College of Emergency Physicians, the state chapter of the Emergency Nurses Association, hospitals, and hospital associations.

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

Reduction in morbidity and mortality due to stroke

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Not applicable

IMPLEMENTATION TOOLS

Quality Measures

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

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Acker JE 3rd, Pancioli AM, Crocco TJ, Eckstein MK, Jauch EC, Larrabee H, Meltzer NM, Mergendahl WC, Munn JW, Prentiss SM, Sand C, Saver JL, Eigel B, Gilpin BR, Schoeberl M, Solis P, Bailey JR, Horton KB, Stranne SK, American Heart Association, American Stroke Association Expert Panel on Emergency Medical Services Systems. Implementation strategies for emergency medical services within stroke systems of care: a policy statement from the American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council. Stroke 2007 Nov;38(11):3097-115. [146 references] PubMed

ADAPTATION

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

DATE RELEASED

2007 Sep

GUIDELINE DEVELOPER(S)

American Heart Association - Professional Association
American Stroke Association - Disease Specific Society

SOURCE(S) OF FUNDING

American Heart Association

GUIDELINE COMMITTEE

American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Writing Committee Members: Joe E. Acker III, EMT-P, MPH, MS; Arthur M. Pancioli, MD, FAHA; Todd J. Crocco, MD; Marc K. Eckstein, MD; Edward C. Jauch, MD, MS; Hollynn Larrabee, MD; Neil M. Meltzer, MPH; William C. Mergendahl, JD, EMT-P; John W. Munn, PhD; Susanne M. Prentiss; Charles Sand, MD, FAHA; Jeffrey L. Saver, MD, FAHA; Brian Eigel, PhD; Brian R. Gilpin, MS; Mark Schoeberl; Penelope Solis, JD; JoAnne R. Bailey, MSPH; Katie B. Horton, RN, MPH, JD; Steven K. Stranne, MD, JD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The American Heart Association (AHA) makes every effort to avoid any actual or potential conflicts of interest that may arise as a result of an outside relationship

or a personal, professional, or business interest of a member of the writing panel. Specifically, all members of the writing group are required to complete and submit a Disclosure Questionnaire showing all such relationships that might be perceived as real or potential conflicts of interest.

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Ownership Interest	Consultant/ Advisory Board	Other
Joe E. Acker III	University of Alabama-Birmingham and Birmingham Regional EMS System	None	None	None	None	None	None
JoAnne R. Bailey	HealthPolicy R&D, in affiliation with Powell Goldstein LLP	None	None	None	None	None	None
Todd J. Crocco	West Virginia University	None	None	None	None	AstraZeneca*	None
Mark K. Eckstein	University of Southern California	None	None	None	None	None	None
Brian Eigel	AHA	None	None	None	None	None	None
Brian R. Gilpin	Independent consultant	None	None	None	None	None	None
Katie B. Horton	HealthPolicy R&D, in affiliation with Powell Goldstein LLP	None	None	None	None	Consultant, AHA/American Stroke Association (ASA)**	None
Edgard C. Jauch	University of Cincinnati	Biosite*; Novo Nordisk*	None	None	None	AstraZeneca*; Biosite*; Johnson & Johnson*; Novo Nordisk*	None
Hollynn Larrabee	University of Cincinnati	None	None	None	None	EMS Protocol Advisory Board of Cincinnati*	None
Neil M. Meltzer	Sinai Hospital, Baltimore	None	None	None	None	None	None
William C. Mergendahl	Professional Ambulance Service	None	None	None	None	None	None
John W. Munn	Texas A&M–Bush School of	None	None	None	None	None	None

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Ownership Interest	Consultant/ Advisory Board	Other
	Government and Public Service; Wireless WERX						
Arthur M. Pancioli	University of Cincinnati	NIH/NINDS**	PDL**	None	None	None	None
Susanne M. Prentiss	New Hampshire Department of Safety	None	None	None	None	None	None
Charles Sand	Emergency Medical Associates of Tampa Bay	None	None	None	None	None	None
Jeffery L. Saver	University of California, Los Angeles	None	None	Boehringer Ingelheim*; Concentric Medical*	UCLA has intellectual property rights to Concentric Medical Merci Retriever	Boehringer Ingelheim*	None
Mark Schoebert	AHA	None	None	None	None	None	None
Penelope Solis	AHA	None	None	None	None	None	None
Steven K. Stranne	Health Policy R&D in affiliation with Powell Goldstein LLP	None	None	None	None	None	None

This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (a) the person receives $10,000 or more during any 12-month period, or 5% or more of the person's gross income; or (b) the person owns 5% or more of the voting stock or share of the entity, or owns $10,000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest

**Significant

Reviewer Disclosures

Reviewer	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Expert Witness	Ownership Interest	Consultant/ Advisory Board	Other
Larry B. Goldstein	Duke University	None	None	None	None	None	None	None
Philip B. Gorelick	University of Illinois	None	None	None	None	None	None	None
Ralph L. Sacco	University of Miami	None	None	None	None	None	None	None

This table represents the relationships of reviewers that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all reviewers are required to complete and submit.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American Heart Association Web site.

Print copies: Available from the American Heart Association, Public Information, 7272 Greenville Ave, Dallas, TX 75231-4596; Phone: 800-242-8721

AVAILABILITY OF COMPANION DOCUMENTS

Recommended measurement parameters are provided in the original guideline document.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI Institute on January 11, 2008. The information was verified by the guideline developer on February 12, 2008.

COPYRIGHT STATEMENT

Copyright to the original guideline is owned by the American Heart Association, Inc. (AHA). Reproduction of the AHA Guideline without permission is prohibited. Single reprint is available by calling 800-242-8721 (US only) or writing the American Heart Association, Public Information, 7272 Greenville Ave., Dallas, TX 75231-4596. Ask for reprint No. 71-0276. To purchase additional reprints: up to 999 copies, call 800-611-6083 (US only) or fax 413-665-2671; 1000 or more copies, call 410-528-4121, fax 410-528-4264, or email kgray@lww.com. To make photocopies for personal or educational use, call the Copyright Clearance Center, 978-750-8400.

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: 9/29/2008