

NFPA[®]

450

**Guide for Emergency Medical
Services and Systems**

2017



This is a preview. [Click here to purchase the full publication.](#)

IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® DOCUMENTS

NOTICE AND DISCLAIMER OF LIABILITY CONCERNING THE USE OF NFPA DOCUMENTS

NFPA® codes, standards, recommended practices, and guides (“NFPA Standards”), of which the document contained herein is one, are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on fire and other safety issues. While the NFPA administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in NFPA Standards.

The NFPA disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on NFPA Standards. The NFPA also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

In issuing and making NFPA Standards available, the NFPA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the NFPA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

The NFPA has no power, nor does it undertake, to police or enforce compliance with the contents of NFPA Standards. Nor does the NFPA list, certify, test, or inspect products, designs, or installations for compliance with this document. Any certification or other statement of compliance with the requirements of this document shall not be attributable to the NFPA and is solely the responsibility of the certifier or maker of the statement.

REMINDER: UPDATING OF NFPA STANDARDS

Users of NFPA codes, standards, recommended practices, and guides (“NFPA Standards”) should be aware that NFPA Standards may be amended from time to time through the issuance of Tentative Interim Amendments or corrected by Errata. An official NFPA Standard at any point in time consists of the current edition of the document together with any Tentative Interim Amendment and any Errata then in effect.

In order to determine whether an NFPA Standard has been amended through the issuance of Tentative Interim Amendments or corrected by Errata, visit the Document Information Pages on NFPA’s website. The Document Information Pages provide up-to-date, document specific information including any issued Tentative Interim Amendments and Errata.

To access the Document Information Page for a specific NFPA Standard, go to <http://www.nfpa.org/docinfo> to choose from the list of NFPA Standards or use the search feature on the right to select the NFPA Standard number (e.g., NFPA 101). The Document Information page includes postings of all existing Tentative Interim Amendments and Errata. It also includes the option to register for an “Alert” feature to receive an automatic email notification when new updates and other information are posted regarding the document.

ISBN: 978-145591403-6 (Print)

ISBN: 978-145591404-3 (PDF)

This is a preview. [Click here to purchase the full publication.](#)

IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® STANDARDS

ADDITIONAL NOTICES AND DISCLAIMERS

Updating of NFPA Standards

Users of NFPA codes, standards, recommended practices, and guides (“NFPA Standards”) should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of Tentative Interim Amendments or corrected by Errata. An official NFPA Standard at any point in time consists of the current edition of the document together with any Tentative Interim Amendments and any Errata then in effect. In order to determine whether a given document is the current edition and whether it has been amended through the issuance of Tentative Interim Amendments or corrected through the issuance of Errata, consult appropriate NFPA publications such as the National Fire Codes® Subscription Service, visit the NFPA website at www.nfpa.org, or contact the NFPA at the address listed below.

Interpretations of NFPA Standards

A statement, written or oral, that is not processed in accordance with Section 6 of the Regulations Governing the Development of NFPA Standards shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

Patents

The NFPA does not take any position with respect to the validity of any patent rights referenced in, related to, or asserted in connection with an NFPA Standard. The users of NFPA Standards bear the sole responsibility for determining the validity of any such patent rights, as well as the risk of infringement of such rights, and the NFPA disclaims liability for the infringement of any patent resulting from the use of or reliance on NFPA Standards.

NFPA adheres to the policy of the American National Standards Institute (ANSI) regarding the inclusion of patents in American National Standards (“the ANSI Patent Policy”), and hereby gives the following notice pursuant to that policy:

NOTICE: The user’s attention is called to the possibility that compliance with an NFPA Standard may require use of an invention covered by patent rights. NFPA takes no position as to the validity of any such patent rights or as to whether such patent rights constitute or include essential patent claims under the ANSI Patent Policy. If, in connection with the ANSI Patent Policy, a patent holder has filed a statement of willingness to grant licenses under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license, copies of such filed statements can be obtained, on request, from NFPA. For further information, contact the NFPA at the address listed below.

Law and Regulations

Users of NFPA Standards should consult applicable federal, state, and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

NFPA Standards are copyrighted. They are made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of safe practices and methods. By making these documents available for use and adoption by public authorities and private users, the NFPA does not waive any rights in copyright to these documents.

Use of NFPA Standards for regulatory purposes should be accomplished through adoption by reference. The term “adoption by reference” means the citing of title, edition, and publishing information only. Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument. In order to assist NFPA in following the uses made of its documents, adopting authorities are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. For technical assistance and questions concerning adoption of NFPA Standards, contact NFPA at the address below.

For Further Information

All questions or other communications relating to NFPA Standards and all requests for information on NFPA procedures governing its codes and standards development process, including information on the procedures for requesting Formal Interpretations, for proposing Tentative Interim Amendments, and for proposing revisions to NFPA standards during regular revision cycles, should be sent to NFPA headquarters, addressed to the attention of the Secretary, Standards Council, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; email: stds_admin@nfpa.org

For more information about NFPA, visit the NFPA website at www.nfpa.org. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/freeaccess.

Copyright © 2016 National Fire Protection Association®. All Rights Reserved.

NFPA®450

Guide for

Emergency Medical Services and Systems

2017 Edition

This edition of NFPA 450, *Guide for Emergency Medical Services and Systems*, was prepared by the Technical Committee on Emergency Medical Services. It was issued by the Standards Council on May 13, 2016, with an effective date of June 2, 2016, and supersedes all previous editions.

This edition of NFPA 450 was approved as an American National Standard on June 2, 2016.

Origin and Development of NFPA 450

In January 1999, the NFPA Standards Council considered NFPA's role in Emergency Medical Services (EMS). After a review of extensive information submitted on the need for such a project, the council voted to create a new EMS project to address EMS-related topics not covered by other existing NFPA projects. A forum on EMS was scheduled at the May 1999 Association meeting in Baltimore, Maryland. In June 1999, NFPA held a focus group meeting to further discuss NFPA's role in EMS. A request for persons interested in being members of this new project was sent out, and a Technical Committee was formed. The first meeting of the Technical Committee was held in Tampa, Florida, to discuss what specific projects the Technical Committee wanted to address. The first edition of NFPA 450, *Guide for Emergency Medical Services and Systems*, was issued in 2004 to assist individuals, agencies, organizations, or systems, as well as those interested or involved in emergency medical services system design, by providing EMS guidelines and recommendations.

For the 2009 edition, the Technical Committee reviewed and revised a number of definitions in Chapter 3 and added new definitions for new material in Chapter 5. The committee also revised material in Section 5.6, Essential System Analysis Components. The table from Annex B was modified and moved to Chapter 5, and Annex B was deleted.

For the 2013 edition, the committee went through and updated the referenced publications to ensure that they were still relevant or pertinent to the document. The intent was to bring the document in line or ensure correlation with many of the nationally published EMS documents in use. Some changes were also made to clarify commonly used terms that initially might have been presented with some confusion or misuse.

For the 2017 edition, the Technical Committee updated several of the references throughout the document and addressed the many changes in the delivery of healthcare services as a result of the Affordable Care Act. Special attention was also made to include mobile integrated healthcare and community paramedicine, growing areas in the delivery of emergency medical services.

Technical Committee on Emergency Medical Services

Kenneth R. Knipper, *Chair*

National Volunteer Fire Council, KY [U]
Rep. National Volunteer Fire Council

Kyle R. Gorman, *Secretary*

Clackamas County Fire District #1, OR [E]

Scott R. Altemose, Trefoil Training & Technical Assistance, PA [SE]
Chris Bell, Vermont Department of Health, VT [U]
Lawrence T. Bennett, University of Cincinnati, OH [SE]
Richard G. Blais, Providence Fire Department, MA [U]
David A. Bradley, Volunteer Firemen's Insurance Services, Inc., PA [I]
Timothy J. Crowley II, Las Vegas, NV [SE]
Michael Dailey, Albany Medical College, NY [SE]
Chad Deardorff, City of York Fire/Rescue Services, PA [E]
Timothy Donovan, Bridgewater Fire Department, MA [E]
Coleman D. Figg, Emerald Isle Fire Department, NC [E]
Heather L. Fredenburg, McNeil and Company, Inc., NY [I]
David R. Harris, U.S. Air Force, NJ [U]
Jeffrey T. Lindsey, University of Florida, FL [SE]
Charles Lucas, Bolivar County Fire Department, MS [E]
Richard D. MacKinnon, Jr., Town of Whitman Fire Department, MA [L]
Rep. International Association of Fire Fighters
Kevin J. McGee, Prince William County Fire & Rescue, VA [E]

Marc E. Nason, Artesia Fire Department, NM [U]
Mark Niemeyer, City of Meridian Fire Department, ID [E]
Rep. Western Fire Chiefs Association
Richard W. Patrick, U.S. Department of Homeland Security, MD [SE]
Karen M. Pickard, UT Southwestern Medical Center, TX [E]
Rep. International Association of Fire Chiefs
Franklin D. Pratt, Los Angeles County Fire Department, CA [U]
Rep. American College of Emergency Physicians
Aarron Reinert, Lakes Region EMS, MN [E]
David O. Simmons, Firemen's Association of the State of New York, NY [U]
David K. Tan, Washington University School of Medicine, MO [U]
Rep. National Association of EMS Physicians
Robert A. Ungar, Robert A. Ungar, P.C., NY [L]
Rep. American Federation of State, County & Municipal Employees
Robert M. Ziegler, Emergency Resource Management, LLC, CT [SE]

Alternates

Byron F. Andrews, III, Sterling Volunteer Rescue Squad, VA [E]
(Alt. to Karen M. Pickard)
Thomas Breyer, International Association of Fire Fighters, DC [L]
Alt. to Richard D. MacKinnon, Jr)
Matt Ellis, Mississippi State Fire Academy, MS [E]
(Alt. to Charles Lucas)

Richard M. Huff, Atlantic Highlands First Aid & Safety Squad, NJ [U]
(Alt. to Kenneth R. Knipper)
Will am S. Niehenke, Glatfelter Insurance Group, PA [I]
(Alt. to David A. Bradley)

Kendall Holland, NFPA Staff Liaison

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents relating to emergency medical services, except those documents covered by other existing NFPA committees.

Contents

Chapter 1 Administration	450- 5	8.2 Performance Objectives.	450- 19
1.1 Scope.	450- 5	8.3 Public Health Outcome Parameters.	450- 20
1.2 Purpose.	450- 5	8.4 Physician Participation.	450- 20
Chapter 2 Referenced Publications	450- 5	8.5 Patient Confidentiality.	450- 20
2.1 General.	450- 5	8.6 Injury/Illness Reduction and Prevention.	450- 20
2.2 NFPA Publications.	450- 5	8.7 Complaints.	450- 20
2.3 Other Publications.	450- 5	8.8 Participation in Studies and Research.	450- 20
2.4 References for Extracts in Advisory Sections. ...	450- 6	8.9 System Review.	450- 20
Chapter 3 Definitions	450- 6	8.10 Documentation.	450- 20
3.1 General.	450- 6	8.11 Multiple Clocks Within a System.	450- 20
3.2 NFPA Official Definitions.	450- 6	Chapter 9 Public Information, Education, and	
3.3 General Definitions.	450- 6	Relations (PIER)	450- 20
Chapter 4 System Regulation and Policy	450- 9	9.1 Public Education.	450- 20
4.1 General.	450- 9	9.2 Public Education System Goals.	450- 21
4.2 Oversight.	450- 9	9.3 Qualifications of Personnel for PIER Activities.	450- 21
4.3 Authorization.	450- 9	9.4 PIER Activities.	450- 21
4.4 Evaluation.	450- 9	9.5 PIER Activities Related to Mass Gatherings.	450- 21
4.5 Roles and Responsibilities.	450- 9	9.6 PIER Activities.	450- 21
4.6 Service Levels.	450- 9	9.7 EMS Agenda for the Future.	450- 21
4.7 Management Structure.	450- 9	9.8 Disaster Education.	450- 21
4.8 Planning.	450- 9	9.9 Collaborative Efforts.	450- 21
4.9 Authority to Implement Plans.	450- 9	9.10 Identification of Available Public Media	
4.10 Resources.	450- 9	Resources.	450- 21
4.11 Participation in Policy Development.	450- 10	9.11 Identification of Funding Resources.	450- 21
4.12 Authority for Policy, Procedure, and		Chapter 10 Communications	450- 21
Operation.	450- 10	10.1 Introduction.	450- 21
4.13 Patient Information Protection.	450- 10	10.2 Access of Emergency Services.	450- 21
Chapter 5 EMS System Analysis and Planning	450- 10	10.3 Lead Agency.	450- 22
5.1 Introduction.	450- 10	10.4 Centralized Communication Plan.	450- 22
5.2 Analysis of System Resources. ...	450- 10	10.5 Computer-Aided Dispatch.	450- 22
5.3 Community Needs Analysis.	450- 11	10.6 Capture of Key Data Elements.	450- 22
5.4 System Goals and Objectives Analysis.	450- 11	10.7 Quality Management	450- 22
5.5 System Design Analysis.	450- 11	10.8 Communications Equipment.	450- 22
5.6 Essential System Analysis Components.	450- 12	10.9 Operability.	450- 22
5.7 EMS System Planning.	450- 15	10.10 Criteria-Based Dispatch.	450- 22
5.8 Continual Risk Assessment and Planning.	450- 16	10.11 Training.	450- 23
5.9 System Assessment Cycle.	450- 16	10.12 Direct Medical Control.	450- 23
5.10 Current Conditions.	450- 16	10.13 Nonemergency Services.	450- 23
5.11 Data Element/Collection/Analysis/Reporting.	450- 16	Chapter 11 Equipment and Facilities	450- 23
5.12 Feedback Loop.	450- 16	11.1 Standard for First Response and Ambulance	
Chapter 6 Finance	450- 16	Transportation.	450- 23
6.1 Determining Cost of System.	450- 16	11.2 Replacement Plan.	450- 23
6.2 Method for Anticipating System Funding		11.3 Response Vehicle Licenses.	450- 23
Sources.	450- 17	11.4 Inspecting Emergency Equipment.	450- 23
6.3 Use of Revenue and Cost Analysis.	450- 17	11.5 Personnel Education and Training.	450- 23
6.4 Financial Plans.	450- 17	11.6 Maintenance Plans.	450- 23
6.5 Business Analysis.	450- 17	11.7 Maintenance Personnel for Emergency	
6.6 Additional Financial Issues.	450- 18	Equipment.	450- 23
Chapter 7 Medical Oversight	450- 18	11.8 Response Facilities.	450- 23
7.1 General.	450- 18	Chapter 12 Human Resources	450- 23
7.2 Single Medical Authority.	450- 18	12.1 Introduction.	450- 23
7.3 System Support of Medical Authority.	450- 18	12.2 Recruitment.	450- 23
7.4 Medical Authority Role.	450- 18	12.3 Education/Training/Certification.	450- 24
7.5 Medical Director Responsibilities.	450- 19	12.4 Retention.	450- 24
7.6 On-Line and Off-Line (Direct and Indirect)		12.5 Personnel.	450- 24
Medical Direction.	450- 19	12.6 Rules and Regulations.	450- 24
7.7 Medical Director Qualifications.	450- 19	12.7 Health and Safety.	450- 24
Chapter 8 Quality Management, Clinical Quality,		Chapter 13 Operations	450- 24
and Data Reliability	450- 19	13.1 Implementation of System Design	
8.1 Quality Management Program.	450- 19	(Operations).	450- 24
		13.2 System Preparation.	450- 24