

NFPA®

450

Guide for
Emergency Medical
Services and Systems

2021



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

Copyright © 2020 National Fire Protection Association®. All Rights Reserved.

NFPA® 450

Guide for

Emergency Medical Services and Systems

2021 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 October 5, 2020, with an effective date of October 25, 2020, and supersedes all previous editions.

This edition of NFPA 450 was approved as an American National Standard on October 25, 2020.

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 health care services as a result of the Affordable Care Act. Special attention was also made to include mobile integrated health care and community paramedicine, growing areas in the delivery of emergency medical services.

The 2021 edition of NFPA 450 has undergone extensive revision to align with NFPA 451, *Guide for Community Health Care Programs*. Following these revisions, NFPA 450 now focuses on EMS and 911 systems whereas NFPA 451 focuses on community health care and mobile integrated health care. The document has further delineated medical control structures and received updates to match new EMS technology and data reporting initiatives, and has a new training chapter that focuses on training for new EMS system responders who are already certified or licensed EMS providers.

Technical Committee on Emergency Medical Services

Kyle R. Gorman, *Chair*
Portland, OR [SE]

Greg M. Ayers, Philips Medical, WA [M]
Chad E. Beebe, ASHE - AHA, WA [U]
Jason Brollini, United EMS Workers, CA [L]
Michael Dailey, Albany Medical College, NY [SE]
Chad Deardorff, City of York Fire/Rescue Services, PA [E]
Jim Detienne, Montana EMS and Trauma, MT [E]
 Rep. National Association of State EMS Officials
Justin Eberly, Volunteer Fireman's Insurance Services, Inc. (VFIS), PA [I]
Coleman D. Figg, Chesterfield Fire & EMS, VA [E]
Raymond Fowler, UT Southwestern Medical Center, TX [SE]
 Rep. American College of Emergency Physicians
David R. Harris, US Air Force, NJ [U]
James W. Horton, Fort Worth Fire Department, TX [U]
Michael Kass, Armstrong Ambulance Service, MA [U]
 Rep. American Ambulance Association
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
Michael MacNeil, Boston Police Patrolmen's Association (BPPA), MA [L]
Steve Mann, MidMichigan Health - Midland EMS, MI [U]
Lydia McCrary, Department of Public Health Office of EMS, GA [E]

Melissa McNally, American Medical Response, Inc. (AMR), FL [U]
Ed Mund, Centralia, WA [L]
 Rep. National Volunteer Fire Council
Marc E. Nason, Artesia Fire Department, NM [U]
Richard W. Patrick, US Department of Homeland Security, MD [SE]
Mark Henderson Pound, Kentville Volunteer Fire Department, Canada [U]
Cory S. Richter, CSR Training & Consulting, LLC, FL [SE]
Vincent D. Robbins, MONOC; Monmouth Ocean Hospital Service Corp., NJ [E]
James Robinson, International Association of EMS Chiefs, DC [E]
Steve Rowland, Hale Products/IDEX Fire and Safety, FL [M]
David Santilli, Bridgewater Fire, MA [E]
Jeffrey Siegler, Washington University School of Medicine EMS (WUEMS), MO [U]
 Rep. National Association of EMS Physicians
David O. Simmons, Firemen's Association of the State of New York, NY [U]
Benjamin Scott Stone, Los Alamos Fire Department, NM [E]
Christopher E. Way, Kootenai County EMS System, ID [L]
 Rep. National Association of Emergency Medical Technicians
Gary Wingrove, The Paramedic Foundation, MN [SE]
Dudley H. A. Wright, II, Monroe Township Fire Department, OH [U]
Matthew Zavadsky, MedStar Mobile Healthcare, TX [U]

Alternates

Byron F. Andrews, III, Sterling Volunteer Rescue Squad, VA [E]
 (Voting Alt. to IAFC Rep.)
Thomas Breyer, International Association of Fire Fighters, DC [L]
 (Alt. to Richard D. MacKinnon, Jr.)
Ken Brown, Goochland Fire Rescue (Retired), VA [L]
 (Alt. to Ed Mund)
Mark L. Johnston, The Christ Hospital, OH [SE]
 (Voting Alt.)
Melissa R Kroll, Washington University, MO [U]
 (Alt. to Jeffrey Siegler)

Anthony McDowell, Henrico County, VA [E]
 (Voting Alt.)
Roshanna Minton, Wayne Township Fire Department, IN [E]
 (Alt. to Chad Deardorff)
Terry Mullins, Arizona Bureau of Emergency Medical Services and Trauma (EMS), AZ [E]
 (Alt. to Jim Detienne)

John Montes, 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	7.2 Medical Authority.	450- 13
1.1 Scope.	450- 5	7.3 System Support of Medical Authority.	450- 13
1.2 Purpose.	450- 5	7.4 Medical Director Role.	450- 14
Chapter 2 Referenced Publications	450- 5	7.5 Medical Authority Role.	450- 14
2.1 General.	450- 5	7.6 Medical Director Responsibilities.	450- 14
2.2 NFPA Publications.	450- 5	7.7 Online and Off-Line (Direct and Indirect)	
2.3 Other Publications.	450- 5	Medical Direction.	450- 14
2.4 References for Extracts in Advisory Sections.		7.8 Medical Director Qualifications.	450- 14
(Reserved)	450- 5	Chapter 8 Quality Management, Clinical Quality,	
Chapter 3 Definitions	450- 5	and Data Reliability	450- 15
3.1 General.	450- 5	8.1 Quality Management Program.	450- 15
3.2 NFPA Official Definitions.	450- 5	8.2 Objectives.	450- 15
3.3 General Definitions.	450- 6	8.3 Public Health Clinical Outcome Parameters.	450- 15
Chapter 4 System Regulation and Policy	450- 9	8.4 Physician and EMS Leadership Participation. ...	450- 16
4.1 General.	450- 9	8.5 Patient Confidentiality.	450- 16
4.2 Oversight.	450- 9	8.6 Injury/Illness Reduction and Prevention.	450- 16
4.3 Authorization.	450- 9	8.7 Complaints.	450- 16
4.4 Evaluation.	450- 9	8.8 Participation in Studies and Research.	450- 16
4.5 Roles and Responsibilities.	450- 9	8.9 System Review.	450- 16
4.6 Service Levels.	450- 9	8.10 Documentation.	450- 16
4.7 Management Structure.	450- 9	8.11 Multiple Clocks Within a System.	450- 16
4.8 Planning.	450- 9	8.12 System Transformation.	450- 16
4.9 Authority to Implement Plans.	450- 9	Chapter 9 Stakeholder Relations	450- 16
4.10 Resources.	450- 9	9.1 General.	450- 16
4.11 Participation in Policy Development.	450- 9	9.2 EMS System Goals.	450- 16
4.12 Authority for Policy, Procedure, and		9.3 Internal Stakeholder Relations.	450- 16
Operation.	450- 9	9.4 External Stakeholder Relations.	450- 16
4.13 Patient Information Protection.	450- 9	9.5 Regulatory Stakeholders Relations.	450- 16
Chapter 5 EMS System Analysis and Planning	450- 9	9.6 Payer Stakeholder Relations.	450- 16
5.1 Introduction.	450- 9	9.7 Achieving Stakeholder Relations Success.	450- 16
5.2 Analysis of System Resources.	450- 9	Chapter 10 Community Education and Risk	
5.3 Community Needs Analysis.	450- 10	Reduction	450- 17
5.4 System Design Analysis.	450- 10	10.1 Community Education.	450- 17
5.5 Continual Risk Assessment and Planning.	450- 11	10.2 Community Education Goals.	450- 17
5.6 Call Processing.	450- 11	10.3 Personnel Qualifications.	450- 17
5.7 Geography.	450- 11	10.4 Community Education Activities.	450- 17
5.8 First Response.	450- 11	10.5 Identification of Funding Resources.	450- 17
5.9 Demographics.	450- 11	10.6 Community Risk Reduction.	450- 17
5.10 Regulatory Environment.	450- 11	Chapter 11 Health Information Technology (HIT)	
5.11 Additional System Needs.	450- 11	and Communications Technology	450- 17
5.12 Disasters.	450- 11	11.1 Interoperability in Health Care Information	
5.13 Medical Center Resources.	450- 12	and Management Systems.	450- 17
5.14 EMS System Risk Reduction.	450- 12	11.2 Patient Care Record Accessibility.	450- 18
5.15 Resource Allotment.	450- 12	11.3 Data Security.	450- 18
5.16 Master Planning/Forecasting.	450- 12	11.4 Communications.	450- 18
5.17 Public Education and Injury/Illness		11.5 Lead Agency.	450- 18
Prevention.	450- 12	11.6 Centralized Communication Plan.	450- 18
5.18 Other Programs.	450- 12	11.7 Computer-Aided Dispatch.	450- 18
5.19 Public Health.	450- 12	11.8 Quality Management.	450- 19
5.20 EMS Quality Measures.	450- 12	11.9 Communication Equipment.	450- 19
Chapter 6 Finance	450- 12	11.10 Operability.	450- 19
6.1 Determining Cost of an EMS System.	450- 12	11.11 Criteria-Based Dispatch.	450- 19
6.2 Method for Anticipating EMS System Funding		11.12 Training.	450- 19
Sources.	450- 12	11.13 Direct Medical Control.	450- 19
6.3 Revenue and Cost Analysis.	450- 13	11.14 Nonemergency Services.	450- 19
6.4 Financial Plans.	450- 13	11.15 Telemedicine.	450- 19
6.5 Business Analysis.	450- 13	11.16 Telehealth.	450- 19
6.6 Additional Financial Issues.	450- 13	Chapter 12 Equipment and Facilities	450- 19
Chapter 7 Medical Oversight	450- 13	12.1 Standard for First Response and Ambulance	
7.1 General.	450- 13	Transportation.	450- 19
		12.2 Replacement and Maintenance Plan.	450- 20

12.3	Response Vehicle Licenses.	450– 20	14.9	Coordinated Medical Oversight.	450– 21
12.4	Inspecting Emergency Equipment.	450– 20	14.10	Logistics.	450– 21
12.5	Personnel Education and Training.	450– 20	14.11	Staff Management.	450– 21
12.6	Maintenance Plans.	450– 20	14.12	Public Information, Education, and Relations. .	450– 21
12.7	Maintenance Personnel for Emergency Equipment.	450– 20	14.13	Regulatory Compliance.	450– 21
12.8	Response Facilities.	450– 20	14.14	Automatic and Mutual Aid.	450– 21
Chapter 13	Human Resources	450– 20	14.15	Coordinated Training Plan.	450– 21
13.1	Introduction.	450– 20	14.16	Emergency Response Planning.	450– 21
13.2	Recruitment.	450– 20	14.17	Nonconventional Resources.	450– 22
13.3	Retention.	450– 20	14.18	System Goals and Objectives Analysis.	450– 22
13.4	Personnel.	450– 20	14.19	Infectious Diseases.	450– 22
13.5	Rules and Regulations.	450– 20	Chapter 15	Training and Education	450– 22
13.6	Health and Safety.	450– 21	15.1	General.	450– 22
Chapter 14	Operations	450– 21	15.2	Training Program.	450– 22
14.1	Implementation of System Design (Operations).	450– 21	15.3	Certification/Licensure.	450– 22
14.2	System and Agency Preparation.	450– 21	15.4	Professional Development Program.	450– 22
14.3	Communications Coordination.	450– 21	15.5	Educational Opportunities.	450– 22
14.4	Response Coordination.	450– 21	15.6	Vehicle Operations Training.	450– 23
14.5	Incident Management.	450– 21	Annex A	Explanatory Material	450– 23
14.6	Treatment Guidelines.	450– 21	Annex B	Time Intervals and Components	450– 27
14.7	Patient Destination Guidelines.	450– 21	Annex C	Informational References	450– 30
14.8	Functional Capabilities of Health Care Facilities.	450– 21	Index	450– 35