

NFPA® 1582

**Standard on
Comprehensive Occupational
Medical Program for
Fire Departments**

2018



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NFPA® 1582

Standard on

Comprehensive Occupational Medical Program for Fire Departments

2018 Edition

This edition of NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*, was prepared by the Technical Committee on Fire Service Occupational Safety and Health. It was issued by the Standards Council on August 1, 2017, with an effective date of August 21, 2017, and supersedes all previous editions.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See “Codes & Standards” at www.nfpa.org for more information.

This edition of NFPA 1582 was approved as an American National Standard on August 21, 2017.

Origin and Development of NFPA 1582

The initial mandatory medical requirements for candidates for fire fighter were in the 1974 edition of NFPA 1001, *Standard on Professional Qualifications for Fire Fighter*. When the first edition of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, was issued in 1987, it required all members engaged in emergency operation to be examined by a physician at least annually and suggested the medical examination be developed and administered by the fire department physician in recognition of the specific requirements of the members’ activities.

In the late 1980s, members of the Technical Committee on Fire Fighter Professional Qualifications (responsible for NFPA 1001) and members of the Technical Committee on Fire Service Occupational Safety and Health (responsible for NFPA 1500) formed a working group to develop a new standard on medical requirements for fire fighters.

The first edition of NFPA 1582 was titled *Standard on Medical Requirements for Fire Fighters* and was issued in 1992 under the responsibility of the Fire Service Occupational Safety and Health Committee. A subsequent edition was issued in 1997. The 2000 edition was titled *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*, in recognition of the increasing amount of guidance being provided in the document to persons serving as fire department physicians.

The title of the 2003 edition was changed to *Standard on Comprehensive Occupational Medical Program for Fire Departments* to reflect a comprehensive occupational medical program. The document included references to the IAFC-IAFF Fire Service Joint Labor-Management Wellness-Fitness Initiative, and to NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Fighters*. These two documents outline a health-related fitness program that is medically validated against NFPA 1582. The 2003 edition delineated between medical issues of a candidate seeking to become a fire fighter, and those of incumbents currently performing the tasks of fire fighting. The intent with incumbents with a medical condition is to rehabilitate them and only restrict them from performing those essential job tasks where their injury or illness would affect the safety of themselves or others on their crew.

In the 2007 edition, new requirements were added to both the chapter on medical evaluation for candidates and the chapter on specific evaluation of medical conditions in incumbents to allow persons with diabetes to enter the fire service or continue performing essential job tasks associated with fire fighting if they meet defined criteria. All the medical conditions that govern whether a person can become a fire fighter and the specific medical conditions of incumbents that affect their ability to perform certain essential job tasks were reviewed and updated, if appropriate, based on current medical research and knowledge.

For the 2013 edition, the committee, with the assistance of several task groups and subject matter experts in specialty areas with regard to medical conditions, updated many of the medical requirements to reflect current practices. Some of the areas that were addressed were that of diabetes, metabolic syndrome, prosthetic adjuncts, hearing aids, and cochlear implants, as well as pregnancy and reproductive system concerns. Also developed for the 2013 edition was a new annex designed to assist the end user with the subject of pregnancy. The committee, with the assistance of the International Association of Fire Fighters, provided an updated Annex C, which contains the protocols for the evaluation of fitness for members. The committee also updated some of the medical requirements relating to hypertension, anticoagulants, TB testing, and screening for cancer.

For the 2018 edition, the committee, with the assistance of several task groups and subject matter experts in specialty areas with regard to medical conditions, has updated many of the medical requirements to reflect current practices. Some of the areas that were addressed were lung function, spinal injuries/conditions, and seizure disorders. A new section was added to the annual fitness evaluation regarding lung function performance. The committee updated all of the annex material in order to provide the best guidance and references for physicians and fire departments.

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Committee Scope: This Committee shall have primary responsibility for documents on occupational safety and health in the working environment of the fire service. The Committee shall also have responsibility for documents related to medical requirements for fire fighters, and the professional qualifications for Fire Department Safety Officer.

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A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex F. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex F.

Chapter 1 Administration

1.1 Scope. This standard contains descriptive requirements for a comprehensive occupational medical program for fire departments.

- ▲ **1.1.1*** The medical requirements in this standard are applicable to fire department candidates and members whose job descriptions as defined by the authority having jurisdiction (AHJ) are outlined in NFPA 1001; NFPA 1002; NFPA 1003; NFPA 1006; NFPA 1021; and NFPA 1051.

1.1.2 This standard provides information and guidance for physicians and other health care providers responsible for fire department occupational medical programs.

- ▲ **1.1.3** These requirements are applicable to public, governmental, military, private, and industrial fire department organi-

zations providing rescue, fire suppression, hazardous materials mitigation, special operations, and other emergency services.

1.1.4 This standard shall not apply to industrial fire brigades that also can be known as emergency brigades, emergency response teams, fire teams, plant emergency organizations, or mine emergency response teams.

1.2 Purpose. The purpose of this standard is to outline an occupational medical program that, when implemented in a fire department, will reduce the risk and burden of fire service occupational morbidity and mortality while improving the health, and thus the safety and effectiveness, of fire fighters operating to protect civilian life and property.

1.2.1 Accordingly, the standard specifies the following information:

- (1) Minimal medical requirements for candidates as delineated in Chapter 6
- (2) Occupational medical and fitness evaluations for members as delineated in Chapters 7 and 8
- (3) Information regarding fire department activities and essential job tasks that assist the department physician in providing proper medical support for members
- (4) Methods and types of data that must be collected to sustain comprehensive occupational medical programs for fire departments

1.2.2* The implementation of the medical requirements outlined in this standard ensures that candidates and current members are medically capable of performing their required duties and will reduce the risk of occupational injuries and illnesses.

1.2.3 Nothing herein is intended to restrict any jurisdiction from exceeding these minimum requirements.

1.3 Implementation.

1.3.1 For candidates, the medical requirements of this standard shall be implemented when this standard is adopted by an AHJ on an effective date specified by the AHJ.

1.3.2* When this standard is adopted by a jurisdiction, date(s) shall be set for members to achieve compliance by establishing a phase-in schedule for compliance with specific requirements, if needed.

- ▲ **1.3.3*** The fire department risk management plan as described in NFPA 1500 shall include implementation of a comprehensive occupational medical program that is compliant with this standard.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 2013 edition.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2017 edition.

NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*, 2015 edition.

NFPA 1006, *Standard for Technical Rescuer Professional Qualifications*, 2017 edition.

NFPA 1021, *Standard for Fire Officer Professional Qualifications*, 2014 edition.

NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications*, 2016 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, 2018 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System*, 2008 edition.

NFPA 1581, *Standard on Fire Department Infection Control Program*, 2015 edition.

NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Department Members*, 2015 edition.

NFPA 1584, *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises*, 2015 edition.

2.3 Other Publications.

2.3.1 ANSI Publications. American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI Z24.5, *Audiometric Device Testing*, 1951.

2.3.2 CDC Publications. Centers for Disease Control and Prevention, 1600 Clifton Road, Atlanta, GA 30333.

“Measles, Mumps, and Rubella — Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps: Recommendations of the Advisory Committee on Immunization Practices (ACIP),” *Morbidity and Mortality Weekly Report*, May 19, 1998, 47 (No. RR-8): 1-57.

“Poliomyelitis Prevention in the United States: Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP),” *Morbidity and Mortality Weekly Report*, 49(No. RR-5):1-22, May 19, 2000.

2.3.3 U.S. Government Publications. U.S. Government Publishing Office, Washington, DC 20402.

Title 29, Code of Federal Regulations, Part 1910.95, “Occupational noise exposure,” 1996.

Title 29, Code of Federal Regulations, Part 1910.120, “Hazardous waste operations and emergency response,” 2002.

Title 29, Code of Federal Regulations, Part 1910.134, “Respiratory protection,” 1998.

Title 29, Code of Federal Regulations, Part 1910.1020, “Access to employee exposure and medical records,” 1996.

Title 29, Code of Federal Regulations, Part 1910.1030, “Bloodborne pathogens,” 2001.

U.S. Dept. of Health & Human Services, National Heart, Lung and Blood Institute, *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC 7), 2004

2.3.4 Other Publications.

International Council of Ophthalmology, “International Clinical Diabetic Retinopathy Disease Severity Scale,” San Francisco, CA, October 2002, <http://www.icoph.org/standards/pdrdetail.html>.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2017 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, 2018 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.3 General Definitions.

3.3.1 Candidate. A person who has submitted an application to become a member of the fire department. [1500, 2018]

3.3.2 Category A Medical Condition. See 3.3.14.1.

3.3.3 Category B Medical Condition. See 3.3.14.2.

3.3.4 Emergency Medical Services. The provision of treatment, such as first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other pre-hospital procedures including ambulance transportation to patients. [1500, 2018]

3.3.5 Essential Job Task. Task or assigned duty that is critical to successful performance of the job. (See Chapter 5 and Section 9.1.)

3.3.6 Evaluation. See 3.3.15, Medical Evaluation.

3.3.7* Fire Department. An organization providing rescue, fire suppression, and related activities, including any public, governmental, private, industrial, or military organization engaging in this type of activity. [1002, 2017]

3.3.8 Fire Department Physician. A licensed doctor of medicine or osteopathy who has been designated by the fire department to provide professional expertise in the areas of occupational safety and health as they relate to emergency services.

3.3.9 Functional Capacity Evaluation. An assessment of the correlation between that individual's capabilities and the essential job tasks.

3.3.10 Health and Fitness Coordinator. A person who, under the supervision of the fire department physician, has been designated by the department to coordinate and be responsible for the health and fitness programs of the department.

3.3.11 Health and Safety Committee. A representative group of individuals who serve along with the fire department physician and health and fitness coordinator, and is chaired by the fire department health and safety officer, who oversee the implementation of the fire department occupational safety and health program.

3.3.12 Health and Safety Officer. The member of the fire department assigned and authorized by the fire chief as the manager of the safety and health program. [1500, 2018]

3.3.13 Infection Control Program. The fire department's formal policy and implementation of procedures relating to the control of infectious and communicable disease hazards where employees, patients, or the general public could be exposed to blood, body fluids, or other potentially infectious materials in the fire department work environment. [1500, 2018]

3.3.14 Medical Condition Classifications.

3.3.14.1 Category A Medical Condition. A medical condition that would preclude a person from performing as a member in a training or emergency operational environment by presenting a significant risk to the safety and health of the person or others.

3.3.14.2 Category B Medical Condition. A medical condition that, based on its severity or degree, could preclude a person from performing as a member in a training or emergency operational environment by presenting a significant risk to the safety and health of the person or others.

3.3.15 Medical Evaluation. The analysis of information for the purpose of making a determination of medical certification. Medical evaluation includes a medical examination.

3.3.16 Medical Examination. An examination performed or directed by the fire department physician.

3.3.17 Medically Certified. A determination by the fire department physician that the candidate or current member meets the medical requirements of this standard.

3.3.18* Member. A person involved in performing the duties and responsibilities of a fire department, under the auspices of the organization. [1500, 2018]

3.3.19 Occupational Safety and Health Program. An occupation specific program, implemented to reduce the risks associated with the occupation, that outlines the components of a program and the roles and responsibilities of the fire department and its members.

Chapter 4 Roles and Responsibilities

4.1 Fire Department Responsibilities.

4.1.1 The fire department shall establish a comprehensive occupational medical program that includes medical evaluations for candidates and members. (See Annex B.)

4.1.2 The medical evaluations and any additional medical tests ordered by the fire department physician shall be provided at no cost to the members.

4.1.2.1* This obligation shall not extend to medical tests beyond the basic medical evaluation for candidates.

4.1.3* The fire department shall have an officially designated physician who shall be responsible for guiding, directing, and advising the members with regard to their health, fitness, and suitability for duty as required by NFPA 1500.

4.1.4* The fire department shall ensure that the fire department physician is a licensed doctor of medicine or osteopathy who has completed residency training in an accredited medical training program and/or is American Boards of Medical Specialties (ABMS) or American Osteopathic Association (AOA) board certified or international equivalent.

4.1.5 The fire department shall provide the fire department physician with a fire service overview, current job descriptions, and the essential job tasks required for all fire department positions and ranks.

4.1.6 The fire department shall provide the fire department physician with the department's organizational statement that outlines types and levels of services provided by the department, in accordance with NFPA 1500.

4.1.7* The types and levels of services provided by the fire department shall dictate for candidates and members the essential job tasks that pertain to its members and shall therefore be correlated to the medical requirements outlined in this standard.

4.1.8 For the purpose of conducting medical evaluations, the fire department shall assist the fire department physician to understand the physiological and psychological demands placed on members as well as the environmental conditions under which they must perform and the personal protective equipment (PPE) they must wear during various types of emergency operations.

4.1.9 The fire department shall ensure member access to evaluation by medical specialists, medical and/or surgical treatment, rehabilitation, and any other intervention prescribed by a medical provider, in consultation with the fire department physician, following an injury or illness resulting from a member's participation in fire department functions.

4.1.10 The fire department shall require that the fire department health and safety officer and the health and fitness coordinator maintain a liaison relationship with the fire department physician to ensure that all aspects of the comprehensive occupational medical program are actively engaged.

4.1.11 The fire department shall ensure employee privacy and confidentiality regarding medical conditions identified during the medical evaluation except as required by law.

4.1.12 Where possible, the fire department shall provide alternate duty position for members when the fire department physician recommends temporary work restrictions.

4.1.13 Medical Record Keeping.

4.1.13.1* The fire department comprehensive occupational medical program shall include collection and maintenance of a confidential medical and health information system for members.

4.1.13.2 All medical record keeping shall comply with the requirements of 29 CFR 1910.1020, "Access to employee exposure and medical records," and other applicable regulations and laws.

4.1.14 The provisions of 4.1.13 shall apply to all health and medical records regarding individual members and to all methods of communicating or transferring the information contained in these records, including written, oral, electronic, and any other means of communication.

4.2 Fire Department Physician Responsibilities.

4.2.1 The fire department physician shall fulfill the following responsibilities:

- (1) Understand the physiological, psychological, and environmental demands placed on fire fighters
- (2) Evaluate fire department candidates and members to identify medical conditions that could affect their ability to safely respond to and participate in emergency operations
- (3) Utilize the essential job task descriptions supplied by the fire department to determine a candidate's or a member's medical certification
- (4) Identify and report the presence of Category A or disqualifying Category B medical conditions if present in candidates
- (5) Inform the fire chief or his/her designee whether or not the candidate or current member is medically certified to safely perform the essential job tasks
- (6) Report the results of the medical evaluation to the candidate or current member, including any medical condition(s) identified during the medical evaluation, and the recommendation as to whether the candidate or current member is medically certified to safely perform the essential job tasks
- (7) Forward copies of any abnormal results along with patient instructions regarding primary care follow-up to candidates or current members who were instructed to seek (as appropriate) medical follow-up to address any medical conditions, or lab abnormalities, identified during the medical evaluation
- (8) Review results of the annual occupational fitness evaluation as described in Chapter 8
- (9) Provide or arrange for a prescriptive rehabilitation and/or fitness program when indicated to aid a member's recovery from illness or injury and enhance his/her ability to safely perform essential job tasks
- (10) Participate in injury prevention and health promotion programs for fire fighters

4.2.2 When medical evaluations are conducted by a physician or medical provider other than the fire department physician, the evaluation shall be reviewed and approved by the fire department physician.

4.2.3 The fire department physician shall review individual medical evaluations and aggregate data from member evaluations in order to detect evidence of occupational exposure(s) or clusters of occupational disease.

4.2.4 The fire department physician shall be a member of the Fire Department Occupational Safety and Health Committee chaired by the health and safety officer as required by NFPA 1500.

4.2.5 The fire department physician shall provide medical supervision for the fire department fitness, return-to-duty rehabilitation, and physical conditioning programs as required by NFPA 1583.

4.2.6* The fire department physician shall ensure adequate on-scene medical support at the incident scene rehabilitation sector for members during emergency operations as required by NFPA 1500; NFPA 1561; and NFPA 1584.

4.2.7 The fire department physician shall provide supervision for the fire department infection control program as required by NFPA 1581.

4.3 Candidate and Member Responsibilities. Each candidate or member shall adhere to the following requirements:

- (1) Cooperate, participate, and comply with the medical evaluation process
- (2) Provide complete and accurate information to the fire department physician and other authorized medical care provider(s)
- (3) Report any occupational exposure such as exposure to hazardous materials or toxic substances and exposure to infectious or contagious diseases
- (4) Report to the fire department physician any medical condition that could interfere with the ability of the individual to safely perform essential job tasks, such as illness or injury, use of prescription or nonprescription drugs, and pregnancy

4.4 Confidentiality of Medical Information.

4.4.1* Specific information concerning medical diagnosis shall be released by the fire department physician only with written permission from the candidate or member, and/or as required by law.

4.4.2 No fire department personnel, other than the fire department physician or appropriate medical staff, shall have access to another member's medical records without the express written consent of that member.

Chapter 5 Essential Job Tasks

5.1 Essential Job Tasks and Descriptions.

5.1.1 The fire department shall evaluate the following 14 essential job tasks against the types and levels of emergency services provided to the local community by the fire department, the types of structures and occupancies in the community, and the configuration of the fire department to determine which tasks apply to their department members and candidates:

- (1)* While wearing personal protective ensembles and self-contained breathing apparatus (SCBA), performing fire-fighting tasks (e.g., hoseline operations, extensive crawling, lifting and carrying heavy objects, ventilating roofs or walls using power or hand tools, forcible entry), rescue operations, and other emergency response actions under stressful conditions, including working in extremely hot or cold environments for prolonged time periods
- (2) Wearing an SCBA, which includes a demand valve-type positive-pressure facepiece or HEPA filter mask, which requires the ability to tolerate increased respiratory workloads

- (3) Exposure to toxic fumes, irritants, particulates, biological (infectious) and nonbiological hazards, and heated gases, despite the use of personal protective ensembles and SCBA
- (4) Depending on the local jurisdiction, climbing six or more flights of stairs while wearing a fire protective ensemble, including SCBA, weighing at least 50 lb (22.6 kg) or more and carrying equipment/tools weighing an additional 20 to 40 lb (9 to 18 kg)
- (5) Wearing a fire protective ensemble, including SCBA, that is encapsulating and insulated, which will result in significant fluid loss that frequently progresses to clinical dehydration and can elevate core temperature to levels exceeding 102.2°F (39°C)
- (6) While wearing personal protective ensembles and SCBA, searching, finding, and rescue-dragging or carrying victims ranging from newborns to adults weighing over 200 lb (90 kg) to safety despite hazardous conditions and low visibility
- (7) While wearing personal protective ensembles and SCBA, advancing water-filled hoselines up to 2 ½ in. (65 mm) in diameter from fire apparatus to occupancy [approximately 150 ft (50 m)], which can involve negotiating multiple flights of stairs, ladders, and other obstacles
- (8) While wearing personal protective ensembles and SCBA, climbing ladders, operating from heights, walking or crawling in the dark along narrow and uneven surfaces that might be wet or icy, and operating in proximity to electrical power lines or other hazards
- (9) Unpredictable emergency requirements for prolonged periods of extreme physical exertion without benefit of warm-up, scheduled rest periods, meals, access to medication(s), or hydration
- (10) Operating fire apparatus or other vehicles in an emergency mode with emergency lights and sirens
- (11) Critical, time-sensitive, complex problem solving during physical exertion in stressful, hazardous environments, including hot, dark, tightly enclosed spaces, that is further aggravated by fatigue, flashing lights, sirens, and other distractions
- (12) Ability to communicate (give and comprehend verbal orders) while wearing personal protective ensembles and SCBA under conditions of high background noise, poor visibility, and drenching from hoselines and/or fixed protection systems (sprinklers)
- (13) Functioning as an integral component of a team, where sudden incapacitation of a member can result in mission failure or in risk of injury or death to civilians or other team members
- (14) Working in shifts, including during nighttime, that can extend beyond 12 hours

5.1.2 The fire department shall provide the fire department physician with the list of essential job tasks, as developed per 5.1.1, to be used in the medical evaluation of members and candidates.

5.1.3 The fire department physician shall consider the physical, physiological, intellectual, and psychological demands of the occupation when evaluating the candidate's or member's ability to perform the essential job tasks.

5.2 Essential Job Tasks for Specialized Teams.

- ▲ **5.2.1** If the fire department operates specialized teams such as hazardous materials units, self-contained underwater breathing

apparatus (SCUBA) teams, technical rescue teams, emergency medical services (EMS) teams, or units supporting tactical law enforcement operations, the fire department shall identify for each team it operates the additional essential job tasks and specialized personal protective equipment (PPE) not specified in 5.1.1(1) through 5.1.1(13) that would apply to the members of that team.

5.2.2 The fire department shall also provide the fire department physician with the list of additional essential job tasks and specialized PPE specific to each specialized team.

5.2.3 When performing the medical evaluation of members of a specialized team, the fire department physician shall also consider the following:

- (1) Additional medical and/or physical requirements that are related to the job tasks being performed by the team that are not enumerated in this standard
- (2) The impact on members of having to wear or utilize specialized PPE that can increase weight, environmental isolation, sensory deprivation, and/or dehydration potential above levels experienced with standard fire suppression PPE

Chapter 6 Medical Evaluations of Candidates

6.1 Medical Evaluation. A medical evaluation of a candidate shall be conducted prior to the candidate being placed in training programs or fire department emergency response activities.

6.1.1* The medical evaluation of a candidate shall include a medical history, examination, and any laboratory tests required to detect physical or medical condition(s) that could adversely affect his/her ability to safely perform the essential job tasks outlined in 5.1.1.

6.1.2* This standard shall provide specific requirements for candidates based on medical conditions that can affect a candidate's ability to safely perform the essential job tasks of a fire fighter.

6.2 Medical Conditions Affecting Ability to Safely Perform Essential Job Tasks.

6.2.1 Medical conditions that can affect a candidate's ability to safely perform essential job tasks shall be designated either Category A or Category B.

6.2.2 Candidates with Category A medical conditions shall not be certified as meeting the medical requirements of this standard.

6.2.3 Candidates with Category B medical conditions shall be certified as meeting the medical requirements of this standard only if they can perform the essential job tasks without posing a significant safety and health risk to themselves, members, or the public.

6.3 Head and Neck.

6.3.1 Head.

6.3.1.1 Category A medical conditions shall include the following:

- (1) Defect of skull preventing helmet use or leaving underlying brain unprotected from trauma
- (2) Any skull or facial deformity that would not allow for a successful fit test for respirators used by that department

- (3) Any head condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.3.1.2 Category B medical conditions shall include the following:

- (1)* Deformities of the skull such as depressions or exostoses
- (2)* Deformities of the skull associated with evidence of disease of the brain, spinal cord, or peripheral nerves
- (3)* Loss or congenital absence of the bony substance of the skull

6.3.2 Neck.

6.3.2.1 Category A medical conditions shall include any neck condition that results in the candidate not being able to safely perform one or more of the essential job tasks.

6.3.2.2 Category B medical conditions shall include the following:

- (1)* Thoracic outlet syndrome
- (2)* Congenital cysts, chronic draining fistulas, or similar lesions
- (3)* Contraction of neck muscles

6.4 Eyes and Vision.

6.4.1 Category A medical conditions shall include the following:

- (1)* Far visual acuity worse than 20/40 binocular, corrected with contact lenses or spectacles, or far visual acuity worse than 20/100 binocular for wearers of hard contacts or spectacles, uncorrected
- (2)* Color perception — monochromatic vision resulting in inability to use imaging devices such as thermal imaging cameras
- (3)* Monocular vision
- (4) Any eye condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.4.2 Category B medical conditions shall include the following:

- (1)* Diseases of the eye such as retinal detachment, progressive retinopathy, or optic neuritis
- (2)* Ophthalmological procedures such as radial keratotomy, Lasik procedure, or repair of retinal detachment
- (3) Peripheral vision in the horizontal meridian of less than 110 degrees in the better eye or any condition that significantly affects peripheral vision in both eyes
- (4) Amblyopia

6.5* Ears and Hearing.

6.5.1 Category A medical conditions shall include the following:

- (1) Chronic vertigo or impaired balance as demonstrated by the inability to tandem gait walk
- (2) On audiometric testing, without the aid of a hearing assistance device, average hearing loss in the unaided better ear worse than 40 decibels (dB) at 500 Hz, 1000 Hz, 2000 Hz, and 3000 Hz when the audiometric device is calibrated to ANSI Z24.5, *Audiometric Device Testing*
- (3) Any ear condition or hearing impairment that results in the candidate not being able to safely perform one or more of the essential job tasks

6.5.2 Category B medical conditions shall include the following:

- (1)* Unequal hearing loss
- (2) Average uncorrected hearing deficit at the test frequencies 500 Hz, 1000 Hz, 2000 Hz, and 3000 Hz worse than 40 dB in either ear
- (3) Atresia, stenosis, or tumor of the auditory canal
- (4)* External otitis, recurrent
- (5)* Agenesis or traumatic deformity of the auricle
- (6)* Mastoiditis or surgical deformity of the mastoid
- (7)* Ménière's disease, labyrinthitis, or tinnitus
- (8)* Otitis media, recurrent
- (9) Surgical procedures to correct or improve hearing or other conditions of the ear

6.6 Dental.

6.6.1 Category A medical conditions shall include any dental condition that results in inability to safely perform one or more of the essential job tasks.

6.6.2 Category B medical conditions shall include the following:

- (1)* Diseases of the jaws or associated tissues
- (2)* Orthodontic appliances
- (3)* Oral tissues, extensive loss
- (4)* Relationship between the mandible and maxilla that interferes with satisfactory postorthodontic replacement or ability to use protective equipment

6.7 Nose, Oropharynx, Trachea, Esophagus, and Larynx.

6.7.1 Category A medical conditions shall include the following:

- (1)* Tracheostomy
- (2)* Aphonia
- (3) Any nasal, oropharyngeal, tracheal, esophageal, or laryngeal condition that results in inability to safely perform one or more of the essential job tasks, including fit testing for respirators used by the fire department and SCBA for fire and hazmat operations

6.7.2 Category B medical conditions shall include the following:

- (1)* Congenital or acquired deformity
- (2)* Allergic rhinitis
- (3) Epistaxis, recurrent
- (4)* Sinusitis, recurrent
- (5)* Dysphonia
- (6) Anosmia
- (7) Tracheal stenosis
- (8) Nasopharyngeal polyposis
- (9)* Obstructive apneas (e.g., sleep apnea) if unresponsive to treatment

6.8 Lungs and Chest Wall.

6.8.1 Category A medical conditions shall include the following:

- (1) Active hemoptysis
- (2) Current empyema
- (3) Pulmonary hypertension
- (4) Active tuberculosis
- (5)* A forced vital capacity (FVC) or forced expiratory volume in 1 second (FEV₁) less than 70 percent predicted even independent of disease

- (6)* Obstructive lung diseases (e.g., emphysema, chronic bronchitis, asthma) with an absolute FEV₁/FVC less than 0.70 and with either the FEV₁ below normal or both the FEV₁ and the FVC below normal (i.e., less than 0.80) (see references in Section F.2)
- (7)* Hypoxemia oxygen saturation less than 90 percent at rest or exercise desaturation by 4 percent or to less than 90 percent exercise testing indicated when resting oxygen is less than 94 percent but greater than 90 percent
- (8)* Asthma, including reactive airways disease requiring bronchodilator or corticosteroid therapy at least once in the previous 2 years, unless the candidate can meet the requirement in 6.8.1.1
- (9) Any pulmonary condition that results in the candidate not being able to safely perform one or more of the essential job tasks
- (10) Lung transplant
- (11) Obstructive sleep apnea with excessive daytime sleepiness, unless all the following criteria are met:
 - (1) Successful treatment
 - (2) Documentation of compliance with CPAP, for sleep study with an oral appliance, or of sleep study after surgery
 - (3) No excessive daytime sleepiness with treatment

6.8.1.1* A candidate who has been diagnosed with asthma or has in the past required bronchodilator, corticosteroid, or anti-inflammatory therapy (e.g., a leukotriene receptor antagonist, such as montelukast) shall be evaluated by a pulmonologist or other expert in asthmatic lung diseases, such as an allergist, to determine if the candidate meets all the following:

- (1) The applicant denies bronchospasm during exertion, temperature/humidity extremes, or irritant exposures.
- (2) The applicant denies the use of bronchodilator rescue medications during exertion, temperature/humidity extremes, or irritant exposures.
- (3) The applicant's asthma has not required systemic corticosteroids, emergency room treatment, or hospital admission in the past 2 years.
- (4) Allergen avoidance or desensitization has been successful.
- (5) Spirometry demonstrates adequate reserve (FVC and FEV₁ greater than or equal to 90 percent) and no bronchodilator response measured off all bronchodilators on the day of testing.
- (6) Normal or negative response to provocative challenge testing [e.g., cold air, exercise (12 METs), methacholine (PC₂₀ greater than 8 is considered normal because response at dose greater than 8 mg/ml might not be clinically significant), histamine, mannitol, or hypertonic saline] or negative response to exercise challenge.

6.8.1.1.1 Challenge testing shall be performed off all anti-inflammatory medications (e.g., inhaled or oral steroids, leukotriene receptor antagonists) for 4 weeks preceding the test, off all antihistamines (e.g., oral allergy medications) for 1 week, and off all bronchodilators on the day of testing.

Δ 6.8.2 Category B medical conditions shall include the following:

- (1)* Pulmonary resection surgery, chest wall surgery, and pneumothorax
- (2) Pleural effusion
- (3)* Fibrothorax, chest wall deformity, and diaphragm abnormalities

- (4)* Interstitial lung diseases
- (5)* Pulmonary vascular diseases or history of pulmonary embolism
- (6)* Bronchiectasis, if abnormal pulmonary function or recurrent infections
- (7) Infectious diseases of the lung or pleural space
- (8) Cystic fibrosis
- (9) Central or obstructive apnea (e.g., sleep apnea)

6.9 Aerobic Capacity.

6.9.1* Category A medical conditions shall include an aerobic capacity less than 12 metabolic equivalents (METs) (12 METs = 42 mL O₂/kg/min).

6.10 Heart and Vascular System.

6.10.1 Heart.

6.10.1.1 Category A medical conditions shall include the following:

- (1)* Clinically significant coronary artery disease, including history of myocardial infarction, angina pectoris, coronary artery bypass surgery, coronary angioplasty, and similar procedures
- (2)* Cardiomyopathy or congestive heart failure, including signs or symptoms of compromised left or right ventricular function or rhythm, including dyspnea, S3 gallop, peripheral edema, enlarged ventricle, abnormal ejection fraction, and/or inability to increase cardiac output with exercise
- (3)* Acute pericarditis, endocarditis, or myocarditis
- (4)* Syncope, recurrent
- (5)* Any medical condition requiring an automatic implantable cardiac defibrillator, unless the condition no longer requires an automatic implantable cardiac defibrillator, or a medical history of ventricular tachycardia or ventricular fibrillation due to ischemic or valvular heart disease, or cardiomyopathy
- (6) Third-degree atrioventricular block
- (7)* Cardiac pacemaker, if the applicant is pacemaker-dependent
- (8) Hypertrophic cardiomyopathy, including idiopathic hypertrophic subaortic stenosis
- (9) Any cardiac condition that results in the candidate not being able to safely perform one or more of the essential job tasks
- (10) Heart transplant

Δ 6.10.1.2 Category B medical conditions shall include the following:

- (1)* Valvular lesions of the heart, including prosthetic valves
- (2)* Recurrent supraventricular or atrial tachycardia, flutter, or fibrillation
- (3)* Left bundle branch block
- (4) Second-degree atrioventricular block in the absence of structural heart disease
- (5) Sinus pause of more than 3 seconds
- (6)* Ventricular arrhythmia (history or presence of multifocal PVCs or nonsustained ventricular tachycardia on resting EKG with or without symptoms; history or presence of sustained ventricular tachycardia with or without symptoms)
- (7)* Cardiac hypertrophy
- (8)* History of a congenital abnormality
- (9)* Chronic pericarditis, endocarditis, or myocarditis

- (10) Brugada syndrome
- (11) Long QT syndrome
- (12) Arrhythmogenic right ventricular cardiomyopathy
- (13) Cardiac pacemaker, if the applicant is not pacemaker-dependent
- (14) Coronary artery disease, if not covered by 6.10.1.1

6.10.2 Vascular System.

6.10.2.1 Category A medical conditions shall include the following:

- (1) Hypertension
 - (a)* Uncontrolled or poorly controlled hypertension
 - (b)* Hypertension with evidence of end organ damage
- (2)* Thoracic or abdominal aortic aneurysm
- (3) Carotid artery stenosis or obstruction resulting in greater than or equal to 50 percent reduction in blood flow
- (4)* Peripheral vascular disease resulting in symptomatic claudication
- (5) Any other vascular condition that results in inability to safely perform one or more of the essential job tasks

6.10.2.2 Category B medical conditions shall include the following:

- (1) Vasospastic phenomena such as Raynaud's phenomenon
- (2)* Thrombophlebitis, thrombosis, or varicosities
- (3)* Chronic lymphedema due to lymphadenopathy or venous valvular incompetency
- (4)* Congenital or acquired lesions of the aorta or major vessels
- (5)* Circulatory instability as indicated by orthostatic hypotension, persistent tachycardia, and peripheral vasomotor disturbances
- (6) History of surgical repair of aneurysm of the heart or major vessel

6.11 Abdominal Organs and Gastrointestinal System.

6.11.1 Category A medical conditions shall include the following:

- (1) Presence of uncorrected inguinal/femoral hernia, if symptomatic
- (2) Any gastrointestinal condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.11.2 Category B medical conditions shall include the following:

- (1)* Cholecystitis
- (2)* Gastritis
- (3)* GI bleeding
- (4)* Acute hepatitis
- (5) Hernia including the following:
 - (a) Uncorrected umbilical, ventral, or incisional hernia if significant risk exists for infection or strangulation
 - (b) Significant symptomatic hiatal hernia if associated with asthma, recurrent pneumonia, chronic pain, or chronic ulcers
 - (c)* Surgically corrected hernia more than 3 months after surgical correction
- (6)* Inflammatory bowel disease or irritable bowel syndrome
- (7)* Intestinal obstruction
- (8)* Pancreatitis

- (9) Diverticulitis
- (10)* History of gastrointestinal surgery
- (11)* Peptic or duodenal ulcer or Zollinger-Ellison syndrome
- (12)* Asplenia
- (13)* Cirrhosis, hepatic or biliary
- (14)* Chronic active hepatitis

6.12 Metabolic Syndrome.

6.12.1* Category A medical conditions shall include metabolic syndrome with aerobic capacity less than 12 METs.

6.12.2 Category B medical conditions shall include metabolic syndrome with aerobic capacity 12 METs or greater.

6.13 Reproductive System. See B.1.2.1.

6.13.1 Category A medical conditions shall include any genital condition that results in inability to safely perform one or more of the essential job tasks.

6.13.2 Category B medical conditions shall include the following:

- (1)* Pregnancy, for its duration
- (2) Dysmenorrhea
- (3) Endometriosis, ovarian cysts, or other gynecologic conditions
- (4) Testicular or epididymal mass

6.14 Urinary System.

6.14.1 Category A medical conditions shall include the following:

- (1) Renal failure or insufficiency requiring continuous ambulatory peritoneal dialysis (CAPD) or hemodialysis
- (2) Any urinary condition that results in the candidate not being able to safely perform one or more of the essential job tasks
- (3) Chronic kidney disease of Stage 4 or greater [glomerular filtration rate (GFR) < 1 oz/min (30 ml/min)]

6.14.2 Category B medical conditions shall include the following:

- (1) Diseases of the kidney
- (2) Diseases of the ureter, bladder, or prostate

6.15 Spine and Axial Skeleton.

Δ 6.15.1 Category A medical conditions shall include the following:

- (1) Scoliosis of thoracic or lumbar spine with angle greater than or equal to 40 degrees
- (2) Any spinal or skeletal condition producing sensory or motor deficit(s) or pain due to radiculopathy or nerve compression
- (3) Any spinal or skeletal condition causing pain that frequently or recurrently requires narcotic analgesic medication
- (4) Cervical vertebral fractures with multiple vertebral body compression greater than 25 percent; evidence of posterior element involvement, nerve root damage, disc involvement, dislocation (i.e., partial, moderate, severe), abnormal exam, ligament instability, symptomatic, and/or less than 6 months post injury or less than 1 year since surgery

- (5) Thoracic vertebral fractures with vertebral body compression greater than 50 percent; evidence of posterior element involvement, nerve root damage, disc involvement, dislocation (e.g., severe — with or without surgery), abnormal exam, ligament instability, symptomatic, and/or less than 6 months post injury or less than 1 year since surgery
- (6) Lumbosacral vertebral fractures with vertebral body compression greater than 50 percent; evidence of posterior element involvement, nerve root damage, disc involvement, dislocation (i.e., partial, moderate, severe), fragmentation, abnormal exam, ligament instability, symptomatic, and/or less than 6 months post injury or less than 1 year since surgery
- (7) History of spine surgery or injury that results in the candidate not being able to safely perform one or more of the essential job tasks

6.15.2 Category B medical conditions shall include the following:

- (1) Congenital or developmental malformations of the back, particularly those that can cause instability, neurological deficits, pain, or limit flexibility
- (2) Scoliosis with angle less than 40 degrees
- (3) Arthritis of the cervical, thoracic, or lumbosacral spine
- (4) Facet tropism, high lumbosacral angle, hyperlordosis, Schmorl's nodes, Scheuermann's disease, spina bifida occulta, spondylolisthesis, spondylolysis, or transitional vertebrae
- (5) History of infections or infarcts in the spinal cord, epidural space, vertebrae, or axial skeletal joints
- (6) History of disectomy or laminectomy or vertebral fractures

6.16 Extremities.

Δ 6.16.1 Category A medical conditions shall include the following:

- (1) Joint replacement, unless all the following conditions are met:
 - (a) Normal range of motion without history of dislocations post-replacement
 - (b) Repetitive and prolonged pulling, bending, rotations, kneeling, crawling, and climbing without pain or impairment
 - (c) No limiting pain
 - (d) Evaluation by an orthopedic specialist who concurs that the candidate can complete all essential job tasks listed in Chapter 5
- (2) Amputation or congenital absence of upper-extremity limb (hand or higher)
- (3) Amputation of either thumb proximal to the mid-proximal phalanx
- (4) Amputation or congenital absence of lower-extremity limb (foot or above) unless the candidate meets all of the following conditions:
 - (a) Stable, unilateral below-the-knee (BKA) amputation with at least the proximal third of the tibia present for a strong and stable attachment point with the prosthesis
 - (b) Fitted with a prosthesis that will tolerate the conditions present in fire fighting when worn in conjunction with standard fire-fighting PPE

- (c) At least 6 months of prosthetic use in a variety of activities with no functional difficulties
- (d) Amputee limb healed with no significant inflammation, persistent pain, necrosis, or indications of instability at the amputee limb attachment point
- (e) No significant psychosocial issues pertaining to the loss of limb or use of prosthesis
- (f) Evaluated by a prosthetist or orthopedic specialist with expertise in the fitting and function of prosthetic limbs who concurs that the candidate can complete all essential job tasks listed in Chapter 5, including wearing personal protective ensembles and SCBA while climbing ladders, operating from heights, and walking or crawling in the dark along narrow and uneven surfaces that may be wet or icy
- (g) Has passed the department's applicant physical ability test as a condition of appointment without accommodations or modification of the protocol

- (5) Chronic nonhealing or recent bone grafts
- (6) History of more than one dislocation of shoulder without surgical repair or with history of recurrent shoulder disorders within the last 5 years with pain or loss of motion, and with or without radiographic deviations from normal
- (7) Any extremity condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.16.2 Category B medical conditions shall include the following:

- (1)* History of shoulder dislocation with surgical repair
- (2) Significant limitation of function of shoulder, elbow, wrist, hand, or finger due to weakness, reduced range of motion, atrophy, unequal length, absence, or partial amputation
- (3) Significant lack of full function of hip, knee, ankle, foot, or toes due to weakness, reduced range of motion, atrophy, unequal length, absence, or partial amputation
- (4)* History of meniscectomy or ligamentous repair of knee
- (5)* History of intra-articular, malunited, or nonunion of upper or lower extremity fracture
- (6)* History of osteomyelitis, septic, or rheumatoid arthritis
- (7) Bone hardware such as metal plates or rods supporting bone during healing

6.17 Neurological Disorders.

6.17.1 Category A medical conditions shall include the following:

- (1) All single unprovoked seizures and epileptic conditions, including simple partial, complex partial, generalized, and psychomotor seizure disorders other than the seizure disorders meeting all of the following conditions:
 - (a) No seizures for the most recent consecutive 5 years after single unprovoked seizure
 - (b) No seizures for the most recent consecutive 10 years if the applicant was diagnosed with epilepsy
 - (c) Currently on a stable regimen of antiepileptic drugs for the most recent 5 years, or on no antiepileptic drugs for the most recent 5 years
 - (d) Normal neurological examination results
 - (e) Normal brain MRI results
 - (f) Normal awake and asleep photic stimulation and hyperventilation EEG study results
 - (g) A definitive statement from a qualified neurological specialist that the candidate meets the criteria

specified in 6.17.1(1) and is neurologically cleared for fire-fighting training and the performance of a fire fighter's essential job task

- (2) Ataxias of heredo-degenerative type
- (3) Cerebral arteriosclerosis as evidenced by a history of transient ischemic attack, reversible ischemic neurological deficit, or ischemic stroke
- (4) Hemiparalysis or paralysis of a limb
- (5)* Multiple sclerosis with activity or evidence of progression within the previous 3 years
- (6)* Myasthenia gravis with activity or evidence of progression within the previous 3 years
- (7) Progressive muscular dystrophy or atrophy
- (8) Uncorrected cerebral aneurysm
- (9) Dementia (e.g., Alzheimer's and other neurodegenerative diseases) with symptomatic loss of function or cognitive impairment (e.g., less than or equal to 28 on Mini-Mental Status Exam)
- (10) Parkinson's disease and other movement disorders resulting in uncontrolled movements, bradykinesia, or cognitive impairment (e.g., less than or equal to 28 on Mini-Mental Status Exam)
- (11) Narcolepsy with cataplexy
- (12) Narcolepsy with persistent excessive daytime sleepiness despite medical treatment
- (13) Amyotrophic lateral sclerosis (ALS)
- (14) Any neurological condition that results in the candidate not being able to safely perform one or more of the essential job tasks

• **6.17.2** Category B medical conditions shall include the following:

- (1) Congenital malformations
- (2)* Migraine
- (3) Clinical disorders with paresis, dyscoordination, deformity, abnormal motor activity, abnormality of sensation, or complaint of pain
- (4) History of subarachnoid or intraparenchymal hemorrhage
- (5) Abnormalities from recent head injury such as severe cerebral contusion or concussion
- (6) Provoked seizure

6.18 Skin.

6.18.1 Category A medical conditions shall include the following:

- (1) Metastatic or locally extensive basal or squamous cell carcinoma or melanoma
- (2) Any dermatologic condition that would not allow for a successful fit test for any respirator required by the fire department
- (3) Any dermatologic condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.18.2 Category B medical conditions shall include the following:

- (1)* Skin conditions of a chronic or recurrent nature (eczema, cystic acne, psoriasis) that cause skin openings or inflammation or irritation of the skin surface
- (2)* Surgery or skin grafting
- (3)* Mycosis fungoides
- (4)* Cutaneous lupus erythematosus
- (5)* Raynaud's phenomenon

- (6)* Scleroderma (skin)
- (7)* Vasculitic skin lesions
- (8)* Atopic dermatitis/eczema
- (9)* Contact or seborrheic dermatitis
- (10)* Stasis dermatitis
- (11)* Albinism, Darier's disease, ichthyosis, Marfan syndrome, neurofibromatosis, and other genetic conditions
- (12)* Folliculitis, pseudo-folliculitis, miliaria, keloid folliculitis
- (13)* Hidradenitis suppurativa, furuncles, carbuncles, or Grade IV acne (cystic)
- (14)* Mechano-bullous disorders (epidermolysis bullosa, Hailey pemphigus, porphyria, pemphigoid)
- (15)* Urticaria or angioedema

6.19 Blood and Blood-Forming Organs.

6.19.1 Category A medical conditions shall include the following:

- (1) Hemorrhagic states requiring replacement therapy
- (2) Sickle cell disease (homozygous)
- (3) Clotting disorders
- (4) Any hematological condition that results in inability to safely perform one or more of the essential job tasks

6.19.2 Category B medical conditions shall include the following:

- (1) Anemia
- (2) Leukopenia
- (3) Polycythemia vera
- (4) Splenomegaly
- (5) History of thromboembolic disease
- (6) Any other hematological condition that results in inability to safely perform essential job tasks

6.20 Endocrine and Metabolic Disorders.

▲ **6.20.1** Category A medical conditions shall include the following:

- (1)* Type 1 diabetes mellitus, unless a candidate meets all of the following criteria:
 - (a) Is maintained by a physician knowledgeable in current management of diabetes mellitus on a basal/bolus (can include subcutaneous insulin infusion pump) regimen using insulin analogs.
 - (b) Has demonstrated over a period of at least 6 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.
 - (c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
 - (d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockcroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)

- (e) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy might be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
- (f) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 MET) by ECG and cardiac imaging.
- (g) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in 5.1.1, allowing the fire department physician to determine whether the candidate meets the following criteria:
 - i. Is being successfully maintained on a regimen consistent with 6.20.1(1)(a) and 6.20.1(1)(b).
 - ii. Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. A hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels. This shall include evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.
 - iii. Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.
 - iv.* Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than two episodes of severe hypoglycemia in the preceding 3 years.
 - v. Is certified not to have a medical contraindication to fire-fighting training and operations.
- (2) Insulin-requiring Type 2 diabetes mellitus, unless a candidate meets all of the following criteria:
 - (a) Is maintained by a physician knowledgeable in current management of diabetes mellitus.
 - (b) Has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.
 - (c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
 - (d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockcroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
- (e) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
- (f) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METS) by ECG and cardiac imaging.
- (g) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in 5.1.1, allowing the fire department physician to determine whether the candidate meets the following criteria:
 - i. Is maintained on a stable insulin regimen and has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels despite varied activity schedules through nutritional therapy and insulin administration.
 - ii. Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. A hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels. This shall include evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.
 - iii. Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.
 - iv.* Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than two episodes of severe hypoglycemia in the preceding 3 years
 - v. Is certified not to have a medical contraindication to fire-fighting training and operations.
- (3) Any endocrine or metabolic condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.20.2 Category B medical conditions shall include the following:

- (1)* Diseases of the adrenal gland, pituitary gland, parathyroid gland, or thyroid gland of clinical significance
- (2) Nutritional deficiency diseases or other metabolic disorder

(3) Diabetes mellitus, not on insulin therapy, but controlled by diet, exercise, and/or oral hypoglycemic agents unless all of the following are met:

- (a) Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. A hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels. This shall include evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.
- (b) If on oral hypoglycemic agents, has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding year.
- (c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
- (d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockcroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
- (e) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
- (f) Normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.

6.21 Systemic Diseases and Miscellaneous Conditions.

6.21.1 Category A medical conditions shall include any systemic condition that results in the candidate not being able to safely perform one or more of the essential job tasks.

6.21.2 Category B medical conditions shall include the following:

- (1) Connective tissue disease, such as dermatomyositis, systemic lupus erythematosus, scleroderma, and rheumatoid arthritis
- (2)* History of thermal, chemical, or electrical burn injury with residual functional deficit
- (3) Documented evidence of a predisposition to or history of heat illness, rhabdomyolysis, metabolic acidosis, or exertion-related incapacitation

6.22 Tumors and Malignant Diseases.

6.22.1 Category A medical conditions shall include the following:

- (1) Malignant disease that is newly diagnosed, untreated, or currently being treated, or under active surveillance due

to the increased risk for reoccurrence, unless not interfering with the performance of the essential job tasks

- (2) Any tumor or similar condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.22.2 Category B medical conditions shall be evaluated on the basis of an individual's current physical condition and on the staging and prognosis of the malignancy (i.e., likelihood that the disease will recur or progress), and include the following:

- (1)* Benign tumors
- (2)* History of CNS tumor or malignancy
- (3)* History of head and neck malignancy
- (4)* History of lung cancer
- (5)* History of GI or GU malignancy
- (6)* History of bone or soft tissue tumors or malignancies
- (7)* History of hematological malignancy

6.23 Psychiatric Conditions.

6.23.1 Category A medical conditions shall include any psychiatric condition that results in the candidate not being able to safely perform one or more of the essential job tasks.

6.23.2 Category B medical conditions shall include the following:

- (1) A history of psychiatric condition or substance abuse problem
- (2) Requirement for medications that increase an individual's risk of heat stress, or other interference with the ability to safely perform essential job tasks

6.24 Chemicals, Drugs, and Medications.

6.24.1 Category A medical conditions shall include those that require chronic or frequent treatment with any of the following medications or classes of medications:

- (1) Narcotics, including methadone
- (2) Sedative-hypnotics
- (3)* Full-dose or low-dose anticoagulation medications or any drugs that prolong prothrombin time (PT), partial thromboplastin time (PTT), or international normalized ratio (INR)
- (4) Beta-adrenergic blocking agents at doses that prevent a normal cardiac rate response to exercise, high-dose diuretics, or central acting antihypertensive agents (e.g., clonidine)
- (5)* Respiratory medications: inhaled bronchodilators, inhaled corticosteroids, systemic corticosteroids, theophylline, and leukotriene receptor antagonists (e.g., montelukast)
- (6) High-dose corticosteroids for chronic disease
- (7) Anabolic steroids
- (8) Any chemical, drug, or medication that results in the candidate not being able to safely perform one or more of the essential job tasks

6.24.1.1 Tobacco use shall be a Category A medical condition (where allowed by law).

6.24.1.2 Evidence of illegal drug use detected through testing, conducted in accordance with Substance Abuse and Mental Health Service Administration (SAMHSA), shall be a Category A medical condition.

6.24.1.3 Evidence of clinical intoxication or a measured blood alcohol level that exceeds the legal definition of intoxication according to the AHJ at the time of medical evaluation shall be a Category A medical condition.

6.24.2* Category B medical conditions shall include the use of the following:

- (1) Cardiovascular agents
- (2) Stimulants
- (3) Psychiatric medications
- (4) Other than high-dose systemic corticosteroids
- (5) Antihistamines
- (6) Muscle relaxants
- (7) Leukotriene receptor antagonists (e.g., **montelukast**) used for allergies that do not affect the lower respiratory system

Chapter 7 Occupational Medical Evaluation of Members

7.1 General.

7.1.1 The fire department shall establish and maintain a confidential occupational medical evaluation program for members.

7.1.2 Occupational medical evaluations shall be conducted as a baseline for surveillance and annually thereafter.

7.1.3* An occupational medical evaluation shall be performed following a member's occupational exposure, illness, injury, or protracted absence from the job.

7.1.3.1 The scope of that evaluation shall be determined by the fire department physician after reviewing the type and severity of the condition.

7.1.4 The components of the medical evaluations shall conform to all applicable U.S. OSHA standards, including 29 CFR 1910.120, "Hazardous waste operations and emergency response"; 29 CFR 1910.134, "Respiratory protection"; 29 CFR 1910.95, "Occupational noise exposure"; and 29 CFR 1910.1030, "Bloodborne pathogens."

7.2 Member Education Regarding Occupational Medical Evaluation Program.

7.2.1 The fire department, the fire department physician, and member organizations where they exist shall be responsible to convey the purposes and importance of the annual occupational medical evaluation to members and to the AHJ.

7.2.2 The purpose of the annual occupational medical evaluation of members shall include but cannot be limited to the following:

- (1) Identifying conditions that interfere with a member's physical or mental ability to safely perform essential job tasks without undue risk of harm to self or others
- (2) Monitoring the effects of exposure to specific biological, physical, or chemical agents on individual members
- (3) Detecting changes in a member's health that can be related to harmful working conditions
- (4) Detecting patterns of disease or injury occurrence in the workforce that could indicate underlying work-related problems
- (5)* Providing members with information about their current health, promoting wellness, and referring them for appropriate further evaluation and treatment

- (6) Providing members with information and education about occupational hazards
- (7) Providing a cost-effective investment in work-related disease prevention, early detection, and health promotion for members
- (8) Complying with federal, state, provincial, local, and/or other jurisdictional requirements

7.3 Timing of the Annual Occupational Medical Evaluation of Members.

7.3.1 All members shall receive a baseline medical evaluation after hiring and prior to performing fire fighter emergency functions and at least annually thereafter.

7.3.2 The baseline medical evaluation shall include the components of the annual occupational medical evaluation not performed as part of the candidate medical evaluation, provided the candidate medical evaluation was performed within the past 12 months.

7.3.3 The annual evaluation shall be completed every 12 months (± 3 months).

7.3.4 Annual medical evaluations shall be compared to baseline and subsequent evaluations to identify clinically relevant changes.

7.3.5 The interval requirements for performance of the annual occupational medical evaluation shall not preclude more frequent medical evaluations of members for new or recurring conditions when requested by the member, fire department physician, or AHJ.

7.4 Components of the Annual Occupational Medical Evaluation of Members.

7.4.1 All components listed in Section 7.5 through Section 7.7 shall be included in the baseline and annual occupational medical evaluations of members.

7.4.2 It shall be acceptable for certain components of the annual occupational medical evaluation to be performed by a member's private physician, provided full results are forwarded in the required time frame to the fire department physician.

7.4.3 Each medical evaluation shall include a medical history (including exposure history), physical examination, blood tests, urinalysis, vision tests, audiograms, spirometry, chest x-ray (as indicated), ECG, cancer screening (as indicated), and immunizations and infectious disease screening (as indicated).

7.4.4 Tests for illegal drugs shall not be performed as part of the annual medical evaluation.

7.5 Medical History.

7.5.1* A medical history questionnaire shall be completed by each member to provide baseline information with which to compare future medical concerns.

7.5.2 An annual medical history questionnaire, which includes changes in health status and known occupational exposures since the previous annual evaluation, shall be completed by each member to provide follow-up information.

7.5.3 Information on the questionnaire and interval concerns shall be reviewed with each member by the fire department physician or designated medical evaluator.

7.6 Physical Examination. The annual physical examination shall include each of the following components:

- (1) Vital signs [temperature, pulse, and respiratory rate, and blood pressure (BP)]
 - (a) BP shall be measured according to the recommendations of the *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC 7)
- (2) Head, eyes, ears, nose, and throat (HEENT)
- (3) Neck
- (4) Cardiovascular
- (5) Pulmonary
- (6) Breast
- (7) Gastrointestinal with digital rectal exam as clinically indicated
- (8) Hernia
- (9) Lymph nodes
- (10) Neurological
- (11) Musculoskeletal
- (12)* Skin (includes screening for cancers)
- (13) Vision

7.7 Ancillary Tests.

Δ 7.7.1* Blood Tests. Blood tests shall be performed for fire fighters, at minimum, every three years for those under the age of 40, and every year for those over the age of 40, and shall include the following:

- (1) CBC with differential, RBC indices and morphology, and platelet count
- (2) Electrolytes (Na, K, Cl, HCO_3 , or CO_2)
- (3) Renal function (BUN, creatinine)
- (4) Glucose
- (5) Liver function tests (ALT, AST, direct and indirect bilirubin, alkaline phosphatase)
- (6) Total cholesterol, HDL, LDL, clinically useful lipid ratios (e.g., percent LDL), and triglycerides

7.7.2 Urine Laboratory Tests. The urine laboratory tests required shall include the following:

- (1) Dipstick analysis for glucose, ketones, leukocyte esterase, protein, blood, and bilirubin
- (2) Microscopic analysis for RBC, WBC, casts, and crystals if indicated by results of dipstick analysis
- (3) Analysis for occupational chemical exposure if indicated

7.7.3* Audiology. Hearing thresholds shall be assessed annually in each ear at each of the following frequencies:

- (1) 500 Hz
- (2) 1000 Hz
- (3) 2000 Hz
- (4) 3000 Hz
- (5) 4000 Hz
- (6) 6000 Hz
- (7) 8000 Hz

7.7.3.1 The fire department physician or other qualified medical evaluator shall compare audiogram results obtained during yearly evaluations with baseline and subsequent test results.

7.7.3.2 Standard threshold shifts shall be corrected for age as permitted by OSHA.

7.7.4 Spirometry.

7.7.4.1* Pulmonary function testing (spirometry) shall be conducted annually to measure the member's forced vital capacity (FVC), forced expiratory volume in 1 second (FEV_1), and the absolute FEV_1/FVC ratio.

7.7.4.2 The fire department physician or other qualified medical evaluator shall compare spirometry results obtained during yearly evaluations with baseline and subsequent test results.

7.7.4.3* FEV_1 and FVC results shall be expressed as the absolute value (liters or milliliters) and as percent predicted adjusted for gender, age, height, and ethnicity using NHANES III normative equations.

7.7.5 Chest Radiographs.

Δ 7.7.5.1 Chest x-rays shall include an initial baseline and shall be repeated as medically indicated.

7.7.5.2 The fire department physician or other qualified medical evaluator shall compare any chest radiographs with baseline and subsequent radiographs.

7.7.6 Electrocardiograms (ECGs).

7.7.6.1 A resting 12-lead ECG shall be performed as part of the baseline medical evaluation and shall be performed annually after age 40 or as clinically indicated.

7.7.6.2 The fire department physician or other qualified medical evaluator shall compare baseline and subsequent ECGs.

7.7.6.3 The fire department physician or other qualified medical evaluator shall compare baseline and subsequent stress tests, when available, to identify clinically relevant changes.

N 7.7.7 Risk Stratification.

N 7.7.7.1 Asymptomatic fire fighters 40 years of age or older with no known atherosclerotic cardiovascular disease (ASCVD) shall be assessed annually for their 2-year and 10-year risks of ASCVD, defined as coronary death, nonfatal myocardial infarction, or fatal or nonfatal stroke.

N 7.7.7.2 Asymptomatic fire fighters younger than 40 years of age known to be at high risk for ASCVD shall be assessed for coronary artery disease.

N 7.7.7.3 The 10-year Heart Risk Calculator created by the American College of Cardiology/American Heart Association (ACC/AHA) shall be used to generate a 10-year risk of ASCVD, taking into consideration the individual's age, sex, race, total cholesterol, high density lipoprotein (HDL) cholesterol, systolic blood pressure, blood pressure-lowering medication use, diabetes status, and smoking status.

N 7.7.7.3.1* Intermediate Risk.

N 7.7.7.3.1.1 Those assessed as being at intermediate risk (i.e., 10 to <20 percent risk of ASCVD over the next 10 years) shall be further evaluated using symptom-limiting exercise stress testing (EST) with or without imaging [e.g., echocardiography, technetium ($^{99\text{m}}\text{Tc}$) sestamibi study] to at least 12 METs.

N 7.7.7.3.1.2 Negative ESTs shall be repeated at least every 2 to 5 years or as clinically indicated, and positive tests shall be referred to a cardiologist for further evaluation and treatment.

N 7.7.7.3.2 High Risk. Those assessed as being at high risk (i.e., ≥ 20 percent risk of ASCVD over the next 10 years) shall be referred to a cardiologist for further evaluation and treatment.

N 7.7.7.4* The Framingham Heart Study 2-year risk prediction score sheets shall be used to generate a 2-year risk of ASCVD, using all of the factors described in 7.7.7.3 except race.

N 7.7.7.4.1 Intermediate Risk. Those assessed as being at intermediate risk (i.e., 2 to 4 percent risk of ASCVD over the next 2 years) shall follow the same evaluation in 7.7.7.3.1.

N 7.7.7.4.2 High Risk. Those assessed as being at high risk (i.e., ≥ 4 percent risk of ASCVD over the next 2 years) shall be referred to a cardiologist for further evaluation and treatment.

7.7.8 Mammography.

Δ 7.7.8.1 Mammography shall be performed on each female member bi-annually for those over the age of 40 and annually for those over the age 50 or as clinically indicated.

7.7.8.2 A qualified radiologist shall compare mammograms to prior mammograms.

7.7.8.3 The fire department physician shall compare mammography reports to prior reports.

Δ 7.7.9 Immunizations and Infectious Disease Screening. The following infectious disease immunizations or infectious disease screenings shall be provided, as indicated:

- (1)* Tuberculosis (TB) screening — baseline, by either tuberculin skin testing using the tuberculin purified protein derivative (PPD) or the tuberculin blood test (interferon gamma release assay); subsequent tuberculosis screening to be performed annually or at a frequency according to CDC guidelines unless the member has a history of positive tuberculin screening test, in which case CDC guidelines for management and subsequent chest radiographic surveillance apply
- (2) Hepatitis C virus screening — baseline and following occupational exposure
- (3) Hepatitis B virus vaccinations and titers — as specified in CDC guidelines; laboratory confirmation of immunity to be tested 1–2 months after completion of the vaccination 3 dose series
- (4)* Tetanus/diphtheria /pertussis (Tdap) vaccine — can be given once to replace the Td booster every 10 years or the 5-year wound management Td dose
- (5)* Measles, mumps, rubella vaccine (MMR) — in absence of documented immunity, two doses of MMR to be administered according to current immunization guidelines
- (6) Polio vaccine — a single booster of IPV for members traveling to endemic areas in the line of duty, or as outlined in the *Morbidity and Mortality Weekly Report* article, “Poliomyelitis Prevention in the United States: Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP)”
- (7) Hepatitis A vaccine
- (8) Varicella vaccine — offered to all non-immune personnel
- (9) Influenza vaccine (seasonal and novel) — offered to all personnel annually
- (10) HIV screening — available to all personnel

7.7.9.1 Pre-screening and immunization against biological threat agents shall be made available to members following CDC guidelines or recommendations.

7.7.9.2* All members shall be offered immunizations against infectious diseases as required by the AHJ and by 29 CFR 1910.1030, “Bloodborne Pathogens.”

7.7.9.3 The fire department physician shall ensure that all members are offered currently recommended immunizations.

7.7.10 Post-Exposure Bloodborne Pathogen Testing.

7.7.10.1 Physicians who care for members shall follow current CDC recommendations for post-exposure prophylaxis (PEP) for bloodborne pathogen (BBP) exposures.

7.7.10.2* There shall be a written protocol for members who present with BBP exposures.

7.7.11 HIV Testing. HIV testing shall be offered on a confidential basis as part of post-exposure protocols and as requested by the fire department physician or member.

7.7.11.1 All results from HIV tests shall be provided directly to the member and shall be maintained by the physician as confidential documents.

7.7.11.2 Results from HIV tests shall not be forwarded to any local, state, provincial, national, or international authorities or databases unless mandated by public health statutes.

7.7.12 Heavy Metal Evaluation.

7.7.12.1 Baseline testing for heavy metals shall be required when indicated by known exposure or substantial risk.

7.7.12.2 Evaluations shall be performed following known exposures, for recurrent exposures, or where required under federal, state, or provincial regulations.

7.7.13 Colon Cancer Screening.

7.7.13.1 Fecal occult blood testing risks and benefits shall be discussed with all members above the age of 40, or earlier if clinically indicated.

7.7.13.2* Colonoscopy services shall be recommended to all members above the age of 50, or earlier if clinically indicated and repeated at regular intervals.

7.7.14* Prostate Cancer. Due to increased prostate cancer risk, the fire department physician shall discuss the risks and benefits of prostate cancer screening, including prostate-specific antigen (PSA) testing, with all male fire fighters beginning at age 50 and annually thereafter.

N 7.7.14.1 For male fire fighters of African-American heritage who are at a higher risk for prostate cancer, the physician shall discuss the risks and benefits of prostate cancer screening, including PSA testing, beginning at age 40 and annually thereafter.

N 7.7.15 Lung Cancer Screening.

N 7.7.15.1 Low-dose computed tomography (LDCT) shall be performed annually on fire fighters over the age of 55 who have a 30-pack-a-year smoking history and currently smoke or have quit within the past 15 years.

N 7.7.15.2 Screening shall be discontinued once a fire fighter has not smoked cigarettes for 15 years or is too ill to benefit.

N 7.7.16 Cervical Cancer Screening.

N 7.7.16.1 Female fire fighters shall be screened for cervical cancer with cytology (Pap smear) every 3 years or screened for a combination of cytology and human papillomavirus (HPV) testing every 5 years.

N 7.7.17 Testicular Cancer Screening.

N 7.7.17.1 A baseline examination shall be performed by a health care provider.

N 7.7.18 Bladder Cancer Screening.

N 7.7.18.1 Urine shall be evaluated for blood (hematuria).

N 7.7.18.2 A positive dipstick for hematuria shall require a follow-up and referral which could involve upper tract imaging, cystoscopy, and/or urine cytology.

N 7.7.19 Oral Cancer Screening.

N 7.7.19.1 The entire mouth shall be examined for signs of oral and oropharyngeal cancers.

N 7.7.20 Thyroid Cancer Screening.

N 7.7.20.1 Physical exam for palpable nodules shall be part of the annual physical examination.

N 7.7.21 Sleep Disturbance Screening.

N 7.7.21.1 Screening for sleep disorders using a validated questionnaire, such as the Berlin Questionnaire or Epworth Sleepiness Scale, shall be provided annually.

N 7.7.21.2* For fire fighters with a high index of suspicion for a sleep disorder based on questionnaires or biometric data, the physician shall discuss the risks and benefits of testing and treatment.

N 7.7.22* Cancer and Cardiovascular Disease Risk Reduction.

N 7.7.22.1 The fire department physician shall annually inform members of the heightened risks of cardiovascular disease and various types of cancer associated with fire fighting.

N 7.7.22.2 In addition to medical screening for these entities as outlined in this standard, the member shall be apprised of occupational routes of hazardous exposures related to fire fighting, as well as common signs, symptoms, and preventive measures for both cardiovascular disease and cancers.

N 7.7.23 Occupational Stress Awareness Consultation.

N 7.7.23.1 The fire department physician shall, during the annual physical, inform the member of, and assess for the heightened risks of, stress associated with occupational exposures related to fire fighting.

N 7.7.23.2 The fire department physician shall make the member aware of common adverse signs and symptoms of occupational stress, inform the member of practices that might limit the damaging effects of occupational stress, and provide the member with referral to licensed behavioral health specialists trained to recognize and treat stress-related disorders in first responders as indicated.

Chapter 8 Annual Occupational Fitness Evaluation of Members**8.1 Weight and Body Composition.**

8.1.1* Body weight shall be measured and recorded annually.

8.1.2 A body composition evaluation including the following shall be conducted on personnel solely for the purpose of departmental health surveillance:

- (1)* Circumferential measurements
- (2) Hydrostatic weighing or Bod-Pod
- (3)* Skinfold measurements
- (4) Bio impedance analysis

8.2 Annual Fitness Evaluation.

8.2.1 A mandatory fitness evaluation that is not punitive or competitive shall be conducted annually as part of an individualized program.

8.2.1.1 All component results of the mandatory fitness evaluation shall be used to establish an individual's baseline or measured against the individual's previous assessments and not against any standard or norm.

8.2.2 The mandatory fitness evaluation shall include a mandatory pre-evaluation procedure and the components in 8.2.2.1 through 8.2.2.4. *(For additional information, see Annex C.)*

8.2.2.1* An evaluation of aerobic capacity shall be performed after appropriate medical evaluation.

8.2.2.1.1 Testing shall be conducted using an appropriate maximal or submaximal protocol *(see C.2.1 and C.2.1.1)*. Bicycle ergometry is not appropriate because it underestimates true aerobic capacity and is not work-task specific.

8.2.2.1.2* At levels below 12 METs, a firefighter shall be counseled to improve his/her fitness.

N 8.2.2.1.3 At levels below 10 METs, participation in a prescribed aerobic fitness program shall be required.

8.2.2.1.4 At levels at or below 8 METs, a prescribed aerobic fitness program shall be required, and the AHJ shall be advised to consider restriction from essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13.

8.2.2.2 An evaluation of muscular strength shall be conducted using each of the following protocols:

- (1) Grip strength evaluation *(See C.2.1.5 for the protocol.)*
- (2) Leg strength evaluation *(See C.2.1.6 for the protocol.)*
- (3) Arm strength evaluation *(See C.2.1.7 for the protocol.)*

8.2.2.3 An evaluation of muscular endurance shall be conducted using each of the following protocols:

- (1) Push-up evaluation *(See C.2.1.9 for the protocol.)*
- (2) Curl-up evaluation *(See C.2.1.11 for the protocol.)*

8.2.2.4 An evaluation of flexibility shall be conducted using the sit-and-reach protocol. *(See C.2.1.12 for the protocol.)*

Chapter 9 Essential Job Tasks — Specific Evaluation of Medical Conditions in Members

9.1 Essential Job Tasks.

9.1.1 The essential job tasks listed by number in this chapter are the same as those listed in Chapter 5 and shall be validated by the fire department as required by Chapter 5.

Δ 9.1.2 The fire department physician shall use the list of essential job tasks in evaluating the ability of a member with specific medical conditions to perform specific job tasks.

Δ 9.1.3 Essential job tasks referenced throughout this chapter by number only shall correspond to the following model list:

- (1)* Wearing personal protective ensemble and SCBA, performing fire-fighting tasks (e.g., hoseline operations, extensive crawling, lifting and carrying heavy objects, ventilating roofs or walls using power or hand tools, forcible entry), rescue operations, and other emergency response actions under stressful conditions, including working in extremely hot or cold environments for prolonged time periods
- (2) Wearing an SCBA, which includes a demand valve–type positive-pressure facepiece or HEPA filter masks, which requires the ability to tolerate increased respiratory workloads
- (3) Exposure to toxic fumes, irritants, particulates, biological (i.e., infectious) and nonbiological hazards, and/or heated gases, despite the use of personal protective ensembles and SCBA
- (4) Depending on the local jurisdiction, climbing six or more flights of stairs while wearing fire protective ensemble weighing at least 50 lb (22.6 kg) or more and carrying equipment/tools weighing an additional 20 to 40 lb (9 to 18 kg)
- (5) Wearing fire protective ensemble that is encapsulating and insulated, which will result in significant fluid loss that frequently progresses to clinical dehydration and can elevate core temperature to levels exceeding 102.2°F (39°C)
- (6) Wearing personal protective ensemble and SCBA, searching, finding, and rescue-dragging or carrying victims ranging from newborns to adults weighing over 200 lb (90 kg) to safety despite hazardous conditions and low visibility
- (7) Wearing personal protective ensemble and SCBA, advancing water-filled hoselines up to 2 ½ in. (65 mm) in diameter from fire apparatus to occupancy [approximately 150 ft (50 m)], which can involve negotiating multiple flights of stairs, ladders, and other obstacles
- (8) Wearing personal protective ensemble and SCBA, climbing ladders, operating from heights, walking or crawling in the dark along narrow and uneven surfaces, and operating in proximity to electrical power lines and/or other hazards
- (9) Unpredictable emergency requirements for prolonged periods of extreme physical exertion without benefit of warm-up, scheduled rest periods, meals, access to medication(s), or hydration
- (10) Operating fire apparatus or other vehicles in an emergency mode with emergency lights and sirens
- (11) Critical, time-sensitive, complex problem solving during physical exertion in stressful, hazardous environments, including hot, dark, tightly enclosed spaces, that is

further aggravated by fatigue, flashing lights, sirens, and other distractions

- (12) Ability to communicate (i.e., give and comprehend verbal orders) while wearing personal protective ensembles and SCBA under conditions of high background noise, poor visibility, and drenching from hoselines and/or fixed protection systems (e.g., sprinklers)
- (13) Functioning as an integral component of a team, where sudden incapacitation of a member can result in mission failure or in risk of injury or death to civilians or other team members
- (14) Working in shifts, including during nighttime, that can extend beyond 12 hours

9.2 Special Teams.

Δ 9.2.1 In addition to essential job tasks specified in 9.1.3(1) through 9.1.3(13), members of specialized teams such as hazardous materials units, SCUBA teams, technical rescue teams, EMS teams, or units supporting tactical law enforcement operations shall be evaluated for their ability to perform essential job tasks and wear specialized PPE related to the duties of those specialized teams.

9.2.2 The fire department shall define those essential job tasks and shall provide the fire department physician with a description of the risks associated with those tasks and specialized PPE as well as any additional medical and/or physical requirements that are not enumerated in this standard.

9.2.3 In defining those tasks, the fire department shall consider the impact on the members required to wear or utilize specialized PPE that can increase weight, environmental isolation, sensory deprivation, and/or dehydration potential above levels experienced with standard fire suppression PPE.

Δ 9.3 Fire Department Physician Roles. After individually evaluating the member and the member's medical records, including job-related medical rehabilitation records, the fire department physician shall recommend restricting members from performing only those specific job tasks that cannot be safely performed by the member given his/her medical condition.

9.3.1 The fire department physician shall perform an individualized assessment of the fire department member.

Δ 9.3.2* The fire department shall, on a case-by-case basis, provide the AHJ a statement that documents the specific essential job task(s) (see 9.1.3) the member shall be restricted from performing.

Δ 9.3.3* The fire department physician shall not comment on whether or not the member can continue employment in the fire department.

9.3.4 There shall be no blanket exclusions.

9.3.5 The AHJ shall determine whether or not the restrictions put forth by the fire department physician can or cannot be accommodated.

9.4* Cardiovascular Disorders.

9.4.1 Cardiovascular disorders shall include any disorder of the cardiovascular system including but not limited to supraventricular or ventricular arrhythmias (abnormal heart beats), coronary artery disease, and cardiac muscle disease or valve disease.

9.4.2 If the member has any cardiovascular disorders, the member shall be individually evaluated in accordance with 9.4.3 through 9.4.23 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.4.3 Coronary Artery Disease.

9.4.3.1* Physician Evaluation. The following clinical conditions referable to coronary artery disease, including a history of myocardial infarction, coronary artery bypass surgery, coronary angioplasty with or without stent placement, or similar procedures, compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department unless all of the following are present:

- (1) Absence of angina pectoris, even if relieved by medication
- (2) Absence of significant stenosis in any coronary artery (i.e., greater than 70 percent lumen diameter narrowing) following treatment
- (3) Normal left ventricular ejection fraction as measured by radionuclide scan, contrast ventriculography, or echocardiography
- (4) Maximal exercise tolerance of at least 12 METs
- (5) Absence of exercise-induced ischemia, ventricular arrhythmias, or conduction abnormalities observed by radionuclide stress test during an evaluation reaching a workload of at least 12 METs
- (6) Control of modifiable risk factor(s) for acute coronary plaque rupture (e.g., tobacco use, hypertension despite treatment, hypercholesterolemia with cholesterol greater than or equal to 180 or low density lipoproteins greater than or equal to 100 despite treatment, or glycosylated hemoglobin greater than 8 percent despite exercise and/or weight reduction)
- (7) At least 6 months since most recent myocardial infarction
- (8) At least 6 months since coronary artery bypass surgery
- (9) At least 3 months since most recent angioplasty — with or without stent placement
- (10) Completion of cardiac rehab, if indicated

9.4.3.2 Physician Guidance. The physician shall consider the following when evaluating a member:

- (1) Evaluation of coronary artery disease requires a stress test with imaging and/or coronary angiogram and some assessment of left ventricular function. Following a myocardial infarction or a coronary revascularization procedure, a radionuclide stress test shall be performed to evaluate exercise tolerance and the presence of exercise-induced myocardial ischemia or ventricular arrhythmias.
- (2) Reports of left ventricular ejection fraction for evaluation of 9.4.3.1(3) should include "normal" values for the lab performing the test and formal interpretation by a cardiologist.
- (3) Workload demands of fire fighting have been shown to exceed the levels shown in 9.4.3.1(4).

9.4.4 Congestive Heart Failure.

9.4.4.1 Physician Evaluation. Congestive heart failure due to any etiology including any disease leading to a lower than normal left or right ventricular ejection fraction, even if corrected by medication, compromises the member's ability to safely perform essential job tasks 1, 2, 4, 7, 9, and 13, and the physi-

cian shall report the applicable job limitations to the fire department.

9.4.4.2 Physician Guidance. The physician shall consider that if the heart failure is due to a reversible process that ultimately results in no abnormality in cardiac performance off all cardiac medications (e.g., hyperthyroidism, anemia), then a history of congestive heart failure does not permanently prevent a member from safely performing the essential job tasks.

9.4.5 Restrictive Cardiomyopathy and Constrictive Pericarditis.

9.4.5.1 Physician Evaluation. Restrictive cardiomyopathy and constrictive pericarditis when resulting in heart failure compromise the member's ability to safely perform essential job tasks 1, 2, 4, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.6 Acute Pericarditis, Acute Endocarditis, and Acute Myocarditis.

9.4.6.1 Physician Evaluation. Acute pericarditis, acute endocarditis, and acute myocarditis compromise the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.4.7 Chronic Pericarditis, Endocarditis, or Myocarditis.

9.4.7.1 Physician Evaluation. Chronic pericarditis, endocarditis, or myocarditis when resulting in heart failure or significant valvular incompetence or arrhythmias compromises the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, and 13, and the physician shall report the applicable job limitations to the fire department.

9.4.7.2 Physician Guidance. Members with pericarditis, endocarditis, or myocarditis shall be carefully assessed for cardiac function, rhythm, and valvular competence at least annually by cardiac echo or other noninvasive or invasive monitoring in consultation with a cardiologist.

9.4.8 Hypertrophic Obstructive Cardiomyopathy.

9.4.8.1 Physician Evaluation. Hypertrophic obstructive cardiomyopathy (HCM) (including idiopathic hypertrophic subaortic stenosis) can compromise the member's ability to safely perform essential job tasks 1 and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.8.2 Physician Guidance. HCM is associated with life-threatening arrhythmias and sudden cardiac death without previous symptoms of heart failure. In specific populations of patients with cardiomyopathies under normal environmental conditions, the following risk factors for sudden cardiac death shall be considered by the physician:

- (1) Unexplained syncope
- (2) History of cardiac arrest
- (3) Sustained ventricular tachycardia (VT)
- (4) Nonsustained VT (3 beats or more of at least 120 beats/minute documented on a Holter monitor)
- (5) Left ventricle thickness of 30 mm or more on echocardiogram
- (6)* Abnormal systolic blood pressures during the exercise stress test (EST), defined as either a failure to increase by at least 20 mm Hg or a drop of at least 20 mm Hg during effort

9.4.9 Recurrent Syncope.

9.4.9.1* Physician Evaluation. Recurrent syncope compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.10 Pacemaker or Automatic Implantable Defibrillator.

9.4.10.1* Physician Evaluation. A medical condition requiring a pacemaker or automatic implantable defibrillator—unless the member is not pacemaker-dependent or the condition no longer requires an automatic implantable cardiac defibrillator—compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.11 Mitral Valve Stenosis.

9.4.11.1 Physician Evaluation. Moderate to severe mitral valve stenosis defined as valve area less than or equal to 1.5 cm² or pulmonary artery systolic pressure greater than 35 mm Hg compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.12 Mitral Valve Insufficiency.

9.4.12.1 Physician Evaluation. Moderate to severe mitral valve insufficiency, defined as the presence of left ventricular dysfunction, compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.12.2 Physician Guidance. Mitral valve prolapse only interferes with safe performance of critical job tasks if associated with arrhythmias or if moderate to severe mitral regurgitation is present.

9.4.13 Aortic Valve Stenosis.

9.4.13.1 Physician Evaluation. Moderate to severe aortic valve stenosis defined as mean aortic valvular gradient greater than or equal to 20 mm Hg and/or valve area less than or equal to 1.0 cm² compromises the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.4.14 Aortic Valve Insufficiency.

9.4.14.1 Physician Evaluation. Moderate to severe aortic valve insufficiency when the cause of left ventricular dysfunction compromises the member's ability to safely perform essential job tasks 1, 4, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.15 Prosthetic Cardiac Valves.

9.4.15.1 Physician Evaluation. Prosthetic cardiac valves compromise the member's ability to safely perform essential job task 8 if anticoagulation is required and essential job tasks 1, 4, 6, 7, and 9 if left ventricular dysfunction is present, and the physician shall report the applicable job limitations to the fire department.

9.4.16 Wolff-Parkinson-White (WPW) Syndrome.

9.4.16.1* Physician Evaluation.

9.4.16.1.1 Wolff-Parkinson-White (WPW) syndrome with structural heart disease compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.16.1.2 WPW syndrome with a history of supraventricular tachycardia (SVT) compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department, unless the member has been treated with ablation and has no inducible arrhythmias as demonstrated by electrophysiology testing.

9.4.17 Other Supraventricular Arrhythmias, Atrial Fibrillation, or Atrial Flutter.

9.4.17.1* Physician Evaluation. Other supraventricular arrhythmias, atrial fibrillation, or atrial flutter when persistent (even if rate controlled) or if anticoagulation is required compromise the member's ability to safely perform essential job task 13 and essential job task 8 if anticoagulation is required, and the physician shall report the applicable job limitations to the fire department.

9.4.17.2 Physician Guidance. The physician shall consider that if the atrial fibrillation is recurrent but self-limited off cardiac medications, there is no evidence of ischemia, and the echocardiogram reveals both a normal mitral valve and a normal-sized left atrium, then the member might be able to safely perform full duties. Paroxysmal atrial tachycardia can sometimes be resolved with modification of diet or treatment of other underlying noncardiac conditions.

9.4.18 Ventricular Arrhythmias and Ectopy.

9.4.18.1 Physician Evaluation.

9.4.18.1.1 The physician shall evaluate the member to determine if a history of ventricular arrhythmias (e.g., ventricular tachycardia and ventricular fibrillation) compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.18.1.2 A history of ventricular ectopy might compromise the member's ability to safely perform essential job task 13, and after evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.18.2 Physician Guidance. The physician shall consider the following when evaluating the member:

- (1) A history of ventricular arrhythmias, including ventricular tachycardia or ventricular fibrillation, poses significant risk for life-threatening sudden incapacitation in the presence of structural abnormalities, functional abnormalities, or ectopy that occurs during exercise.
- (2) A history of ventricular ectopy might pose a significant risk for life-threatening sudden incapacitation if structural or ischemic heart disease is present or if ventricular ectopy increases during exercise.
- (3) Holter monitoring (i.e., 24-hour ECG recording) might show ventricular ectopy but should show no evidence of ventricular arrhythmias.
- (4) Echocardiograph must show normal function and no evidence of structural abnormalities.

- (5) Stress testing off cardiac medications must show no evidence for ischemia, ventricular tachycardia, or ventricular fibrillation.
- (6) Premature ventricular contractions (PVCs) should resolve with increasing levels of exercise up to 12 METs.

9.4.19 Atrioventricular Block.

9.4.19.1 Physician Evaluation.

9.4.19.1.1 Third-degree or complete atrioventricular block compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.19.1.2 Other types of atrioventricular block with sinus pause greater than 3 seconds, left bundle branch block, right bundle branch block, or second-degree Type I atrioventricular block might compromise the member's ability to safely perform job task 13 if cardiac structural (i.e., coronary arteries, valves, myocardium) abnormalities are present, if left ventricular function is abnormal, or if heart rate does not increase with exercise in the absence of a mechanical pacemaker, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.20 Hypertension.

N 9.4.20.1 Stage 1 Hypertension.

9.4.20.1.1* Physician Evaluation.

N **9.4.20.1.1.1** Members with stage 1 hypertension shall be referred to their primary care physician to ensure that their blood pressure is controlled and to screen for end-organ organ damage.

N **9.4.20.1.1.2** End-organ damage, or a 10 percent or greater risk of ASCVD over the next 10 years determined by using the ACC/AHA Heart Risk Calculator, compromises the member's ability to safely perform essential job tasks 1, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless a symptom-limiting cardiac exercise test to 12 METs is performed with normal results every 1 to 3 years.

N 9.4.20.2 Stage 2 Hypertension.

N 9.4.20.2.1 Physician Evaluation.

Δ **9.4.20.2.1.1** Stage 2 hypertension (i.e., systolic pressure greater than or equal to 160 mm Hg or diastolic pressure greater than or equal to 100 mm Hg) compromises the member's ability to safely perform essential job tasks 1, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

N **9.4.20.2.1.2** Once the physician has acted in accordance with 9.4.20.2.1.1, if the member's blood pressure is subsequently controlled, end-organ damage and risk of ASCVD over the next 10 years shall be assessed by using the ACC/AHA Heart Risk Calculator.

N **9.4.20.2.1.3** End-organ damage, or a 10 percent or greater risk of ASCVD over the next 10 years determined by using the ACC/AHA Heart Risk Calculator, compromises the member's ability to safely perform essential job tasks 1, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless a symptom-limiting cardiac exercise

test to 12 METs is performed with normal results every 1 to 3 years.

9.4.21 Metabolic Syndrome.

9.4.21.1* Members with metabolic syndrome are at increased risk for cardiovascular ischemic disease, diabetes, and accelerated hypertension and shall undergo a stress test with imaging; if the results are abnormal or the member is unable to achieve a symptom limiting cardiac exercise test to 12 METs every 1 to 3 years, the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, 10, and 13 will be compromised.

9.4.22 Cardiac Congenital Abnormality.

9.4.22.1 Physician Evaluation. A history of a cardiac congenital abnormality that has been treated by surgery but with residual complications or that has not been treated by surgery, leaving residuals or complications, might compromise the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, 9, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.23 Cardiac Hypertrophy.

9.4.23.1 Physician Evaluation. Cardiac hypertrophy without a normal response to exercise of the heart might compromise the member's ability to safely perform essential job task 13 and other job functions due to limitations of endurance, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.23.2* Physician Guidance. The physician shall consider that this condition can result in the potential for sudden incapacitation in addition to hypertension.

9.4.24 Heart Transplant.

9.4.24.1 Physician Evaluation. Cardiac transplantation prevents a normal rise in heart rate and increases risk of syncope and sudden cardiac death and therefore shall be considered as compromising the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, 10, and 13.

9.4.24.2 Physician Guidance. The physician shall consider that this condition can result in the potential for sudden incapacitation and that the many immunosuppressive drugs required to prevent rejection increase the likelihood for infection.

9.5 Vascular Disorders.

9.5.1 Vascular disorders shall refer to any disorder of the vascular (arterial or venous) system including but not limited to aneurysm, peripheral vascular insufficiency, and thromboembolic disease.

9.5.2 If the member has any vascular disorders, the member shall be individually evaluated in accordance with 9.5.3 through 9.5.11 to determine if the disorders compromise the member's ability to safely perform the essential job tasks, recognizing that heart rate, blood pressure, and shear forces on vessel walls are increased when performing many of the essential job tasks, increasing the risk of acute dissection, rupture, and/or embolic phenomena that even in a normal environment can result in life-threatening sudden incapacitation.

9.5.3 Aortic Aneurysm.

9.5.3.1 Physician Evaluation. Aortic aneurysm (thoracic aortic aneurysm of any size or abdominal aortic aneurysm greater than or equal to 4 cm) compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 13, and the physician shall report the applicable job limitations to the fire department.

9.5.3.2 Physician Guidance. When evaluating a member with an abdominal aortic aneurysm less than 4 cm, the physician shall recognize that treatment requires careful control of blood pressure and regular follow-up with cardiac imaging.

9.5.3.2.1 A minimum of 6 months post-surgical repair of any aortic aneurysm shall be required before the member can be evaluated for return-to-duty status.

9.5.4 Carotid Artery Disease.

9.5.4.1 Physician Evaluation. Carotid artery disease when symptomatic and/or reduction in blood flow of greater than 70 percent is present compromises the member's ability to safely perform job task 13, and the physician shall report the applicable job limitations to the fire department.

9.5.5 Thoracic Outlet Syndrome.

9.5.5.1 Physician Evaluation. Thoracic outlet syndrome (symptomatic) compromises the member's ability to safely perform essential job tasks 1 and 13, and the physician shall report the applicable job limitations to the fire department.

9.5.6 Peripheral Vascular Disease.

9.5.6.1 Physician Evaluation. Peripheral vascular disease (arterial or venous) when symptomatic (claudication) or severe peripheral edema is present compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.5.7 Thrombophlebitis.

9.5.7.1 Physician Evaluation.

9.5.7.1.1 Thrombophlebitis or deep venous thrombosis that is recurrent or persistent or requires anticoagulation compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.5.7.1.2 Full-dose or low-dose anticoagulation compromises the member's ability to safely perform essential job task 8, and the physician shall report the applicable job limitations to the fire department.

9.5.8 Circulatory Instability.

9.5.8.1 Physician Evaluation. Circulatory instability as indicated by orthostatic hypotension or persistent tachycardia compromises the member's ability to safely perform essential job tasks 1, 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.5.9 Peripheral Vascular Disease.

9.5.9.1 Physician Evaluation. Peripheral vascular disease, such as severe Raynaud's phenomenon, might compromise the member's ability to safely perform essential job tasks (e.g., under certain conditions, including cold weather), and after

further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.5.10 Lymphedema.

9.5.10.1 Physician Evaluation. Chronic, severe lymphedema or massive edema of any type (e.g., due to lymphadenopathy, severe venous valvular incompetency, endocrine abnormalities, or low flow states) compromises the member's ability to safely perform essential job tasks 1, 4, 5, and 8, and the physician shall report the applicable job limitations to the fire department.

9.5.11 Lesions of Aorta or Major Vessels.

9.5.11.1 Physician Evaluation.

9.5.11.1.1 Congenital or acquired lesions of the aorta or major blood vessels might interfere with circulation and prevent the safe performance of essential job tasks 1, 4, and 7 due to limitations of endurance, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.5.11.1.2 Congenital or acquired lesions of the aorta or major blood vessels could increase the potential for life-threatening sudden incapacitation, which might compromise the member's ability to safely perform essential job task 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.6* Endocrine and Metabolic Disorders.

9.6.1 Endocrine and metabolic disorders shall include disorders of the hypothalamic-pituitary-thyroid-adrenal axis.

9.6.2 If the member has any endocrine and metabolic disorders, the member shall be individually evaluated in accordance with 9.6.3 through 9.6.7 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.6.3 Type 1 Diabetes Mellitus That Requires Treatment with Insulin.

9.6.3.1* Physician Evaluation. Type 1 diabetes mellitus that requires treatment with insulin compromises the member's ability to safely perform essential job tasks 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the member meets all of the following criteria:

- (1) Is maintained by a physician knowledgeable in current management of diabetes mellitus on a basal/bolus (can include subcutaneous insulin infusion pump) regimen using insulin analogs.
- (2) Has demonstrated over a period of at least 6 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the member's experience and history dealing with erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.

- (3) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
- (4) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockcroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
- (5) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
- (6) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.
- (7) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in Section 9.1, allowing the fire department physician to determine whether the member meets the following criteria:
 - (a) Is maintained on a stable basal/bolus regimen using insulin analogs and has demonstrated over a period of at least 6 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration despite varied activity schedules.
 - (b) Has had hemoglobin A1C measured at least four times a year (intervals of two to three months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. Hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.
 - (c) Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.
 - (d) Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than two episodes of severe hypoglycemia in the preceding 3 years.
 - (e) Is certified not to have a medical contraindication to fire-fighting training and operations.

9.6.3.2 Physician Guidance. When evaluating a member with Type 1 diabetes mellitus, the physician shall recognize that episodes of severe hypoglycemia are associated with an increased risk of subsequent episodes and that hypoglycemia can interfere with cognitive function and judgment. Presence of microvascular and neurological complications of diabetes might increase the risk of hypoglycemic events.

9.6.4 Type 2 Diabetes Mellitus That Requires Treatment with Insulin.

9.6.4.1* Physician Evaluation. Type 2 diabetes mellitus that requires treatment with insulin compromises the member's ability to safely perform essential job tasks 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the member meets all of the following criteria:

- (1) Is maintained by a physician knowledgeable in current management of diabetes mellitus.
- (2) Has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the member's experience and prior history dealing with the erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.
- (3) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
- (4) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockcroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
- (5) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
- (6) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.
- (7) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in Section 9.1, allowing the fire department physician to determine whether the member meets the following criteria:
 - (a) Is maintained on a stable insulin regimen and has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels despite varied activity schedules through nutritional therapy and insulin administration.
 - (b) Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. Hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, including evidence of a set

schedule for blood glucose monitoring and a thorough review of data from such monitoring.

- (c) Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.
- (d) Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than one episode of severe hypoglycemia in the preceding 5 years.
- (e) Is certified not to have a medical contraindication to fire-fighting training and operations.

9.6.4.2 Physician Guidance. When evaluating a member with Type 2 diabetes mellitus, the physician shall recognize that episodes of severe hypoglycemia are considered the best predictors of an increased risk of subsequent episodes and hypoglycemia interferes with cognitive function and judgment.

9.6.5 Diabetes Mellitus That Does Not Require Insulin Therapy.

9.6.5.1 Physician Evaluation. Diabetes mellitus that does not require insulin therapy and that is controlled by diet, exercise, and/or oral hypoglycemic agents compromises the member's ability to safely perform essential job tasks 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the member meets all of the following criteria:

- (1) Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. Hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, shall including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.
- (2) If on oral hypoglycemic agents, has had no episodes of severe hypoglycemia (defined as requiring assistance of another in the preceding year).
- (3) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
- (4) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockcroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
- (5) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
- (6) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.

9.6.6 Nutritional Deficiencies.

9.6.6.1 Physician Evaluation. Nutritional deficiencies, including those caused by congenital or acquired disorders of metabolism, might compromise the member's ability to safely perform essential job tasks 1, 5, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.6.6.2 Physician Guidance. When evaluating a member with nutritional deficiencies, the physician shall perform an assessment of severity and functional impact and should include percent of ideal body weight, body mass index (BMI), muscle strength, endurance, energy levels, and abilities to feed, hydrate, and absorb essential nutrients pre- and post-fire activities.

9.6.7 Diseases of the Adrenal Gland, Pituitary Gland, Parathyroid Gland, or Thyroid Gland.

9.6.7.1 Physician Evaluation. Untreated or inadequately controlled diseases of the adrenal gland, pituitary gland, parathyroid gland, or thyroid gland of clinical significance compromise the member's ability to safely perform essential job tasks 1, 5, and 9, and the physician shall report the applicable job limitations to the fire department.

9.6.7.2 Physician Guidance. When evaluating a member, the physician shall recognize that clinically controlled diseases of the adrenal gland, pituitary gland, parathyroid gland, or thyroid gland with normal exam and serum levels do not compromise the member's ability to safely perform essential job tasks.

9.7* Lung, Chest Wall, and Respiratory Disorders.

9.7.1 Lung, chest wall, and respiratory disorders shall include disorders of breathing and the exchange of respiratory gases (oxygen and carbon dioxide), central neurologic control of respiratory drive, nose, sinuses, throat, pharynx, larynx, trachea, airways, lungs, pleura, and chest wall.

9.7.2 When evaluating a member for lung, chest wall, and respiratory disorders, the physician shall consider the following:

- (1) Efficient breathing and respiratory gas exchange is required for essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13.
- (2) Wearing protective clothing increases the oxygen consumption required to safely perform these tasks and, therefore, increases the respiratory workload.
- (3) SCBA is a positive-pressure demand valve respirator that provides a barrier against the inhalation of noxious/toxic gases and particulate matter but at increased metabolic cost due to its weight and increased respiratory workload (resistance and dead space).
- (4) If respiratory function or gas exchange is already compromised (increased work of breathing from structural or functional abnormalities, hypoxia, and/or hypercapnia) prior to the performance of essential job tasks, then the increased oxygen demand of strenuous physical exertion, while wearing a personal protective ensemble and/or SCBA, leads to early onset of fatigue or respiratory insufficiency.
- (5) Lung, chest wall, and respiratory disorders can compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13.

9.7.3 If the member has any lung, chest wall, or respiratory disorders, the member shall be individually evaluated in accordance with 9.7.4 through 9.7.24 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.7.4 Tracheostomy.

9.7.4.1 Physician Evaluation. Tracheostomy compromises the member's ability to safely wear SCBA (essential job task 2), communicate effectively due to oropharyngeal dysfunction (essential job task 12), and effectively clear secretions or inhaled particulate matter (essential job task 3), and the physician shall report the applicable job limitations to the fire department.

9.7.4.2 Physician Guidance. The physician shall consider that a member with a history of tracheostomy that is now sealed and without persistent respiratory disease or dysfunction does not prevent safe performance of essential job tasks.

9.7.5 Chronic Cough.

9.7.5.1 Physician Evaluation. Chronic cough with or without hemoptysis might compromise the member's ability to safely wear SCBA (essential job task 2) and to safely perform in an irritant environment (essential job task 3), and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.5.2 Physician Guidance. The physician shall consider the severity of the cough, the impact of irritants and SCBA use on cough severity, and the impact of cough severity on the ability to safely wear SCBA and perform strenuous exertion. The cause of chronic cough and/or hemoptysis needs to be evaluated, as the underlying conditions can also produce increased work of breathing, gas exchange abnormalities, or airway hyperreactivity.

9.7.6* Asthma.

9.7.6.1 Physician Evaluation. Asthma compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the following provisions are met:

- (1) The member has no bronchospasm during exertion, temperature/humidity extremes, irritant exposures, fire activities, or hazmat activities.
- (2) The member does not use bronchodilator rescue medications during exertion, temperature/humidity extremes, irritant exposures, fire activities, or hazmat activities.
- (3) A review of the member's fire department records (e.g., training, operations, rehabilitation, and medical) verifies that no asthmatic episodes have occurred during fire suppression or hazardous materials operations or training.
- (4) The member's asthma has not required systemic corticosteroids, emergency room treatment, or hospital admission in the past 2 years.
- (5) The member shows adequate reserve in pulmonary function (i.e., FVC and FEV₁ greater than or equal to 90 percent) and no bronchodilator response measured off all bronchodilators on the day of testing.
- (6)* The member has a normal or negative response of less than 20 percent decline in FEV₁ from baseline for provo-

cative challenge testing or less than 13 percent decline in FEV₁ from baseline for exercise challenge testing using cold air, methacholine (PC₂₀ greater than 8 is considered normal, as response at dose greater than 8 mg might not be clinically significant), histamine, mannitol, or exercise.

- (7) Failure to wear an SCBA during all phases of fire suppression places an asthmatic fire fighter at risk for sudden incapacitation.
- (8) The member has a signed statement from a pulmonary or asthma specialist, knowledgeable in the essential job tasks and hazards of fire fighting, that the member meets the criteria specified in 9.7.6.1(1) through 9.7.6.1(5) and can safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13 without the use of bronchodilator rescue medications.

9.7.6.2 Physician Guidance. The physician shall consider the following when evaluating the member's asthmatic condition:

- (1) Exposures to exertion, temperature extremes, cold dry air from SCBA, combustion by-products, irritants, and particulate matter are all potent provokers of asthma attacks.
- (2) Bronchodilator medications are not adequate maintenance therapy to control symptoms in the irritant environment of the fireground or hazardous materials incident scene because their use has not been approved by the FDA for use on the fireground or hazardous materials incident scene and because several studies have implicated the frequent use of beta-agonists (i.e., short- and long-acting bronchodilators) as an independent predictor or risk for sudden death and myocardial infarction in the United States, Canada, Britain, New Zealand, and Australia.
- (3) There is a high probability that acute hyperreactivity in this environment can induce immediate or progressive clinical asthma (i.e., bronchospasm and wheeze) that can lead to sudden incapacitation from status asthmaticus and/or cardiac ischemia. There are no studies that support or deny that asthma in this environment can be prevented or adequately controlled by anti-inflammatory medications (e.g., inhaled corticosteroids, cromolyn, leukotriene modifiers). It is not acceptable to use or rely on bronchodilator medications for this purpose because in a hazardous environment, SCBA cannot be removed to use a rescue inhaler, and there are no studies that support or deny that their use is preventive or effective in a fire/smoke environment.
- (4) The member's work history, as well as clinical findings on annual evaluation, should be used as an assessment of the member's practical ability to safely perform the essential job tasks.

9.7.7* Allergic Lower Respiratory Disorders.

9.7.7.1 Physician Evaluation. Allergic lower respiratory disorders might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.7.2 Physician Guidance. The physician shall consider that allergic lower respiratory disorder, a term used to define asthma (clinical reversible bronchospasm), is triggered by a known allergic insult and once triggered these patients have demonstrable airway hyperreactivity for weeks to months; it can be recurrent and/or become permanent.

9.7.8* Chronic Obstructive Airways Diseases.

9.7.8.1 Physician Evaluation. Chronic obstructive airways diseases (e.g., chronic bronchitis, emphysema), if moderate to severe (i.e., absolute FEV₁/FVC ratio less than or equal to 0.70 and an FEV₁ less than 70 percent predicted), compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department unless the following provisions are met:

- (1) The FEV₁ is 50 percent or greater.
- (2) The member has no bronchospasm during exertion, temperature/humidity extremes, SCBA use, irritant exposures, fire activities, or hazmat activities.
- (3) The member does not require daily bronchodilator therapy.
- (4) The member has experienced continuous tobacco cessation for more than 3 months.
- (5) The member has not required systemic corticosteroids, emergency room treatment, or hospital admission for pulmonary disease, including chronic bronchitis or pneumonia, in the past 2 years.
- (6) The member can perform an exercise test to 12 METs without exercise-induced evidence for the following:
 - (a) Bronchospasm (i.e., a decline FEV₁ of more than 13 percent from baseline)
 - (b) Oxygen desaturation (i.e., a fall in oxygen saturation on room air by 4 percent from baseline or to 94 percent or less)
 - (c) Cardiac ischemia or clinically significant arrhythmias
- (7) There is no evidence of pulmonary hypertension on echocardiography.

9.7.9 Hypoxemic Disorders.

▲ **9.7.9.1 Physician Evaluation.** Hypoxemic disorders, when moderate to severe (i.e., oxygen saturation less than 90 percent or a Po₂ less than 65 mm Hg, measured at rest and corrected to sea level on room air), or the presence of significant exercise desaturation (i.e., a fall in oxygen saturation by 4 percent from baseline or to less than 90 percent) compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 7, and 13, and the physician shall report the applicable job limitations to the fire department.

▲ **9.7.9.2 Physician Guidance.** The physician shall recognize the following situations when evaluating the member:

- (1) A resting oxygen saturation of 90 percent to 93 percent corrected to sea level requires measurement at exercise to 12 METs determine if desaturation (i.e., decrease in oxygen saturation by greater than or equal to 4 percent from baseline or to less than 90 percent) occurs.
- (2) Hypoxia can be the result of central regulatory disturbances, obstructive sleep apnea, asthma, chronic obstructive airways diseases, interstitial lung disease, pulmonary hypertension, chronic pulmonary embolism, and so forth.
- (3) In this environment, gas exchange abnormalities and respiratory insufficiency no matter the cause have the potential for life-threatening sudden incapacitation from cardiopulmonary insufficiency.

9.7.10 Hypercapnic Disorders.

9.7.10.1 Physician Evaluation. Hypercapnic disorders (elevated carbon dioxide with serum P_{CO2} greater than or equal to 45 mm Hg) found during evaluation of respiratory complaints or disease compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, and 13, and the physician shall report the applicable job limitations to the fire department.

9.7.10.2 Physician Guidance. The physician shall consider that hypercapnia can be the result of central regulatory disturbance, medications, obstructive sleep apnea, severe asthma, end-stage chronic obstructive airways diseases, or end-stage interstitial lung disease. In this environment, gas exchange abnormalities and respiratory insufficiency no matter the cause have the potential for life-threatening sudden incapacitation from cardiopulmonary insufficiency.

9.7.11 Pulmonary Hypertension.

9.7.11.1 Physician Evaluation. Pulmonary hypertension compromises the member's ability to safely perform essential job tasks 1, 3, 4, 7, and 13, and the physician shall report the applicable job limitations to the fire department. *[For further details see sections on hypoxia (9.7.9), pulmonary embolism (9.7.20), and cardiac valve dysfunction (9.4.11).]*

9.7.12 Tracheal Stenosis.

9.7.12.1 Physician Evaluation. Tracheal stenosis might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, and 12 if pulmonary dysfunction is reduced (FVC less than 60 percent of predicted or abnormal inspiratory flow volume loop) or if the underlying cause of the stenosis prevents the successful and safe performance of the essential job tasks, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.13 Pulmonary Resection Surgery, Chest Wall Surgery, or Traumatic Pneumothorax.

9.7.13.1 Physician Evaluation.

9.7.13.1.1 If the member has had pulmonary resection surgery, chest wall surgery, and/or traumatic pneumothorax, the physician shall evaluate the member for full recovery from the surgery with full pulmonary function testing (PFT), including spirometry, lung volumes, diffusion, and hemoglobin oxygen saturation.

9.7.13.1.2 Abnormal PFTs or decreased gas exchange might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 7, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.13.2 Physician Guidance. The physician shall consider the following when evaluating the member:

- (1) Pulmonary function tests should be performed after adequate healing and pain resolution and clearance by the thoracic surgeon; generally, this is 4 weeks after thoracoscopic surgery and 6 to 8 weeks after open-chest surgery.
- (2) Pulmonary function tests should be either normal or show only a minimal restrictive disorder without evidence for interstitial disease or gas exchange abnormalities.