Medical toxicology

Background

Medical toxicology is a clinical subspecialty that focuses on the prevention, evaluation, treatment, and monitoring of injury and illness from exposures to drugs and chemicals, as well as biological and radiological agents. Medical toxicologists treat people for toxic substances ingested in food or water, inhaled in the air, injected, or absorbed from skin on contact. Poisons can be of animal, plant, metal, or bacterial origin. Medical toxicologists also provide poison control center leadership.

Important areas of medical toxicology include:

➤ Acute drug poisoning
➤ Adverse drug events
➤ Drug abuse, addiction, and withdrawal
➤ Environmental and workplace exposures
➤ Chemicals and hazardous materials
➤ Terrorism preparedness
➤ Venomous bites and stings

To become a medical toxicologist, physicians must complete training in a specialty field that is recognized by the American Board of Medical Specialties (ABMS) or the American Osteopathic Association (AOA). They must then complete an accredited fellowship program in medical toxicology. The length of the educational program is 24 months, and it must be associated with an Accreditation Council for Graduate Medical Education (ACGME)–accredited residency program in emergency medicine, pediatrics, or preventive medicine.

For certification in medical toxicology, physicians used to sit for the examination offered by the American Board of Medical Toxicology (ABMT). In 1991, the American Board of Emergency Medicine (ABEM), the American Board of Pediatrics (ABP), and the American Board of Preventive Medicine (ABPM) sought ABMS approval to offer subspecialty certification in medical toxicology. In September 1992, the ABMS approved medical toxicology as a subspecialty and recognized the ABEM, ABP, and ABPM as the sponsoring boards. The ABEM is the administering board. The first examination was offered in 1994 and is currently administered every other year.

Involved specialties

Medical toxicologists
Positions of specialty boards

**ABEM/ABP/ABPM**

The ABEM, ABP, and ABPM offer a certificate of added qualifications (CAQ) in the subspecialty of medical toxicology. Applicants must meet the following general requirements:

➤ Be a diplomate in good standing with an ABMS member board. Applicants who are diplomates of the ABEM, ABP, and ABPM must submit their applications to their respective boards. Physicians who are certified by a member board of the ABMS, other than ABP and ABPM, and who fulfill the admission criteria may apply through ABEM. Since the implementation of the Medical Toxicology Maintenance of Certification in 2006, diplomates are not required to maintain their primary certification in order for subspecialty certification to remain valid.

➤ Hold a current, active, valid, unrestricted, and unqualified license to practice medicine in at least one jurisdiction in the United States, its territories, or Canada, and in each jurisdiction in which they practice.

➤ Complete a medical toxicology fellowship program, which should be sponsored by and based within reasonable geographical proximity to an accredited residency program in emergency medicine, pediatrics, preventive medicine, or any combination of these programs. Physicians who entered training in medical toxicology on or after July 1, 2000, are required to complete their training in a program accredited for training in medical toxicology by the ACGME or the Royal College of Physicians and Surgeons of Canada.

➤ Fulfill any general requirements that the ABEM, ABP, or ABPM may demand. These requirements are available from each of the board offices.

➤ Successfully complete the medical toxicology subspecialty certification examination.

Certification is valid for 10 years. To renew certification, a physician must fulfill the requirements of the Medical Toxicology Maintenance of Certification program. Effective January 1, 2006, ABEM does not require physicians to maintain emergency medicine certification in order to maintain medical toxicology certification if the physician is participating in the Medical Toxicology Maintenance of Certification program.

**AOBEM**

The AOA grants a CAQ to applicants with additional training and/or experience in the subspecialty of medical toxicology through the American Osteopathic Board of Emergency Medicine (AOBEM). To be eligible for the certification examination in this subspecialty, applicants must meet the following requirements:

➤ Have a valid, unchallenged, unrestricted license to practice in the state or territory where their practice is conducted prior to and during the examination process

➤ Be a member in good standing with the AOA or Canadian Osteopathic Association
Be a diplomate of any certifying board of the AOA
➤ Have completed a two-year AOA-approved training program in medical toxicology

**Positions of societies, academies, colleges, and associations**

**ACMT**

The American College of Medical Toxicology (ACMT) publishes the position statement *Hospital Privileges for Physicians Practicing Medical Toxicology*. In the statement, the ACMT states that physicians are required to have specific credentials to be eligible for admitting and/or consultative privileges in medical toxicology for adult and pediatric inpatient or outpatient services. Inpatient services include the provision of medical care in emergency and critical care units.

The requirements include prior certification in a primary specialty, which could be internal medicine, pediatrics, emergency medicine, preventive (occupational) medicine, or any other clinical specialty, and one of the following:

➤ Completion of a two-year medical toxicology fellowship
➤ Certification as a diplomate of the ABMT
➤ ABMS certification by the sub-board of medical toxicology

The ACMT recommends a hospital privileging form that includes one of the following sets of qualifications for medical toxicologists:

➤ MD or DO, member or partner of the hospital medical staff, and privileges in toxicology prior to January 1, 1990
➤ Appropriate primary training (i.e., board certification or eligibility in emergency medicine, internal medicine, pediatrics, family practice, or occupational medicine), current board certification or eligibility by the ABMT or the ABMS-recognized CAQ, and documentation of experience

**ACGME**

In its *Program Requirements for Graduate Medical Education in Medical Toxicology*, the ACGME states that fellowship programs in medical toxicology must teach the basic skills and knowledge of medical toxicology practice and must provide progressive responsibility for and experience in the management of clinical problems.

Medical toxicology fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. With regard to patient care, fellows:

➤ Must have a minimum of 12 months of clinical experience as the primary or consulting physician responsible for providing direct/bedside patient evaluation, management, screening, and preventive services.
➤ Must be provided with experience in evaluating and managing patients with workplace and environmental exposures and must have experience in workplace evaluation, as well as in an occupational medicine or toxicology clinic.

➤ Must have opportunities to evaluate and manage patients with acute and long-term workplace and environmental toxic exposures. Clinical training should include experience in an industrial setting or an occupational medicine clinic or access to occupational medicine patients in a referral setting. The fellow should also have the opportunity to evaluate and manage intoxicated patients in both industrial and referral settings, including responsibility for providing bedside evaluation, management, screening, and preventive services for a minimum of 12 months or its full-time equivalent.

➤ Must have 12 months’ experience with a referral population of poisoned patients under the supervision of a physician who is certified in medical toxicology or who possesses suitable equivalent qualifications as determined by the Review Committee.

➤ Should have the opportunity to maintain their primary board skills during training. However, the program may not require that fellows provide more than 12 hours per week of clinical practice not related to medical toxicology.

Medical toxicology fellows must also demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. With regard to medical knowledge, fellows:

➤ Must have a curriculum that includes the following academic and clinical content:
  − Clinical manifestations, differential diagnosis, and management of poisoning
  − Biochemistry of metabolic processes; the pharmacology, pharmacokinetics, and teratogenesis; toxicity; and interactions of therapeutic drugs
  − Biochemistry of toxins, kinetics, metabolism, mechanisms of acute and chronic injury, and carcinogenesis
  − Experimental design and statistical analysis of data as related to laboratory, clinical, and epidemiologic research
  − Laboratory techniques in toxicology
  − Occupational toxicology, including acute and chronic workplace exposure to intoxicants and basic concepts of the workplace and industrial hygiene
  − Prevention of poisoning, including prevention of occupational exposures by intervention methodologies that take into account the epidemiology, environmental factors, and the role of regulation and legislation in prevention;
  − Environmental toxicology, including identification of hazardous materials and the basic principles of management of large-scale environmental contamination and mass exposures
  − Function, management, and financing of poison control centers
  − Oral and written communication skills and teaching techniques
  − Principles of epidemiology and risk communication, analytical laboratory techniques, and research methodologies in toxicology
Must be offered an average of at least five hours per week of planned educational experiences (not including change-of-shift reports). These educational experiences should include presentations based on the defined curriculum, morbidity and mortality conferences, journal review, administrative seminars, and research methods. They may include but are not limited to problem-based learning, laboratory research, and computer-based instruction, as well as joint conferences cosponsored with other disciplines.

Must have the following included in the curriculum: pharmacology, pharmacokinetics, and drug interactions. This must be accomplished by:
- An affiliation with a school of pharmacy or department of pharmacology that provides regular didactic experience and consultation to fellows
- The presence of a Doctor of Pharmacology or PhD pharmacologist as a participating member of the teaching faculty

AOA

In conjunction with the American College of Osteopathic Emergency Physicians, the AOA publishes its Basic Standards for Fellowship Training in Medical Toxicology, which is designed to provide osteopathic fellows with advanced and concentrated training in medical toxicology and to prepare fellows for examination for certification in medical toxicology by the AOBEM.

To provide fellows with thorough medical knowledge of the complex differential diagnoses and treatment options in medical toxicology and the ability to integrate the applicable sciences with clinical experiences, the training program must:

- Provide the opportunity to develop the teaching skills of fellows in medical toxicology
- Provide the opportunity to develop interest in and understanding of research in medical toxicology
- Prepare fellows to use critical thinking in making decisions for patient management
- Prepare fellows to demonstrate proficiency in the psychomotor skills required of a competent toxicologist
- Train fellows to read, interpret, and participate in clinical research

With regard to patient care, medical toxicology fellows are expected to have the ability to rapidly evaluate, initiate, and provide treatment for patients with conditions resulting from exposure to or ingestion of agents that may be natural or man-made toxins; assist the primary physician in the care of the patient; and potentially restore the patient to a healthy state. Therefore, the training program must:

- Provide the medical toxicology fellow with progressive patient care responsibilities, commencing with general medical skills and progressing to complete care of patients in need
- Provide training that will enable the medical toxicology fellow to evaluate, initiate treatment, and provide therapy for patients
Positions of accreditation bodies

**CMS**

CMS has no formal position concerning the delineation of privileges for medical toxicology. However, CMS’ *Conditions of Participation (CoP)* define a requirement for a criteria-based privileging process in §482.22(c)(6), stating, “The bylaws must include criteria for determining the privileges to be granted to individual practitioners and a procedure for applying the criteria to individuals requesting privileges.”

§482.12(a)(6) states, “The governing body must assure that the medical staff bylaws describe the privileging process. The process articulated in the bylaws, rules or regulations must include criteria for determining the privileges that may be granted to individual practitioners and a procedure for applying the criteria to individual practitioners that considers:

➤ Individual character
➤ Individual competence
➤ Individual training
➤ Individual experience
➤ Individual judgment

The governing body must ensure that the hospital’s bylaws governing medical staff membership or the granting of privileges apply equally to all practitioners in each professional category of practitioners.”

Specific privileges must reflect activities that the majority of practitioners in that category can perform competently and that the hospital can support. Privileges are not granted for tasks, procedures, or activities that are not conducted within the hospital, regardless of the practitioner’s ability to perform them.

Each practitioner must be individually evaluated for requested privileges. It cannot be assumed that every practitioner can perform every task, activity, or privilege specific to a specialty, nor can it be assumed that the practitioner should be automatically granted the full range of privileges. The individual practitioner’s ability to perform each task, activity, or privilege must be individually assessed.

CMS also requires that the organization have a process to ensure that practitioners granted privileges are working within the scope of those privileges.

CMS’ CoPs include the need for a periodic appraisal of practitioners appointed to the medical staff/granted medical staff privileges (§482.22[a][1]). In the absence of a state law that establishes a time frame for the periodic appraisal, CMS recommends that an appraisal be conducted at least every 24 months. The purpose of the periodic appraisal is to determine whether clinical privileges or membership should be continued, discontinued, revised, or otherwise changed.
**The Joint Commission**

The Joint Commission has no formal position concerning the delineation of privileges for medical toxicology. However, in its *Comprehensive Accreditation Manual for Hospitals*, The Joint Commission states, “The hospital collects information regarding each practitioner’s current license status, training, experience, competence, and ability to perform the requested privilege” (MS.06.01.03).

In the introduction for MS.06.01.03, The Joint Commission states that there must be a reliable and consistent system in place to process applications and verify credentials. The organized medical staff must then review and evaluate the data collected. The resultant privilege recommendations to the governing body are based on the assessment of the data.

The Joint Commission introduces MS.06.01.05 by stating, “The organized medical staff is responsible for planning and implementing a privileging process.” It goes on to state that this process typically includes:

- Developing and approving a procedures list
- Processing the application
- Evaluating applicant-specific information
- Submitting recommendations to the governing body for applicant-specific delineated privileges
- Notifying the applicant, relevant personnel, and, as required by law, external entities of the privileging decision
- Monitoring the use of privileges and quality-of-care issues

MS.06.01.05 further states, “The decision to grant or deny a privilege(s) and/or to renew an existing privilege(s) is an objective, evidence-based process.”

The EPs for standard MS.06.01.05 include several requirements as follows:

- The need for all licensed independent practitioners who provide care, treatment, and services to have a current license, certification, or registration, as required by law and regulation
- Established criteria as recommended by the organized medical staff and approved by the governing body with specific evaluation of current licensure and/or certification, specific relevant training, evidence of physical ability, professional practice review data from the applicant’s current organization, peer and/or faculty recommendation, and a review of the practitioner’s performance within the hospital (for renewal of privileges)
- Consistent application of criteria
- A clearly defined (documented) procedure for processing clinical privilege requests that is approved by the organized medical staff
- Documentation and confirmation of the applicant’s statement that no health problems exist that would affect his or her ability to perform privileges requested
- A query of the NPDB for initial privileges, renewal of privileges, and when a new privilege is requested
Written peer recommendations that address the practitioner’s current medical/clinical knowledge, technical and clinical skills, clinical judgment, interpersonal skills, communication skills, and professionalism

A list of specific challenges or concerns that the organized medical staff must evaluate prior to recommending privileges (MS.06.01.05, EP 9)

A process to determine whether there is sufficient clinical performance information to make a decision related to privileges

A decision (action) on the completed application for privileges that occurs within the time period specified in the organization’s medical staff bylaws

Information regarding any changes to practitioners’ clinical privileges, updated as they occur

The Joint Commission further states, “The organized medical staff reviews and analyzes information regarding each requesting practitioner’s current licensure status, training, experience, current competence, and ability to perform the requested privilege” (MS.06.01.07).

In the EPs for standard MS.06.01.07, The Joint Commission states that the information review and analysis process is clearly defined and that the decision process must be timely. The organization, based on recommendations by the organized medical staff and approval by the governing body, develops criteria that will be considered in the decision to grant, limit, or deny a request for privileges. The criteria must be consistently applied and directly relate to the quality of care, treatment, and services. Ultimately, the governing body or delegated governing body has the final authority for granting, renewing, or denying clinical privileges. Privileges may not be granted for a period beyond two years.

Criteria that determine a practitioner’s ability to provide patient care, treatment, and services within the scope of the privilege(s) requested are consistently evaluated.

The Joint Commission further states, “Ongoing professional practice evaluation information is factored into the decision to maintain existing privilege(s), to revise existing privileges, or to revoke an existing privilege prior to or at the time of renewal” (MS.08.01.03).

In the EPs for MS.08.01.03, The Joint Commission says there is a clearly defined process facilitating the evaluation of each practitioner’s professional practice, in which the type of information collected is determined by individual departments and approved by the organized medical staff. Information resulting from the ongoing professional practice evaluation is used to determine whether to continue, limit, or revoke any existing privilege.

**HFAP**

The Healthcare Facilities Accreditation Program (HFAP) has no formal position concerning the delineation of privileges for medical toxicology. The bylaws must
include the criteria for determining the privileges to be granted to the individual practitioners and the procedure for applying the criteria to individuals requesting privileges (03.01.09). Privileges are granted based on the medical staff’s review of an individual practitioner’s qualifications and its recommendation regarding that individual practitioner to the governing body.

It is also required that the organization have a process to ensure that practitioners granted privileges are working within the scope of those privileges.

Privileges must be granted within the capabilities of the facility. For example, if an organization is not capable of performing open-heart surgery, no physician should be granted that privilege.

In the explanation for standard 03.01.13 related to membership selection criteria, HFAP states, “Basic criteria listed in the bylaws, or the credentials manual, include the items listed in this standard. (Emphasis is placed on training and competence in the requested privileges.)”

The bylaws also define the mechanisms by which the clinical departments, if applicable, or the medical staff as a whole establish criteria for specific privilege delineation.

Periodic appraisals of the suitability for membership and clinical privileges is required to determine whether the individual practitioner’s clinical privileges should be approved, continued, discontinued, revised, or otherwise changed (03.00.04). The appraisals are to be conducted at least every 24 months.

The medical staff is accountable to the governing body for the quality of medical care provided, and quality assessment and performance improvement (03.02.01) information must be used in the process of evaluating and acting on re-privileging and reappointment requests from members and other credentialed staff.

**DNV**

DNV has no formal position concerning the delineation of privileges for medical toxicology. MS.12 Standard Requirement (SR) #1 states, “The medical staff bylaws shall include criteria for determining the privileges to be granted to individual practitioners and a procedure for applying the criteria to those individuals that request privileges.”

The governing body shall ensure that under no circumstances is medical staff membership or professional privileges in the organization dependent solely upon certification, fellowship, or membership in a specialty body or society.

Regarding the Medical Staff Standards related to Clinical Privileges (MS.12), DNV requires specific provisions within the medical staff bylaws for:
The consideration of automatic suspension of clinical privileges in the following circumstances: revocation/restriction of licensure; revocation, suspension, or probation of a DEA license; failure to maintain professional liability insurance as specified; and noncompliance with written medical record delinquency/deficiency requirements.

Immediate and automatic suspension of clinical privileges due to the termination or revocation of the practitioner’s Medicare/Medicaid status.

Fair hearing and appeal.

The Interpretive Guidelines also state that core privileges for general surgery and surgical subspecialties are acceptable as long as the core is properly defined.

DNV also requires a mechanism (outlined in the bylaws) to ensure that all individuals provide services only within the scope of privileges granted (MS.12, SR.4).

Clinical privileges (and appointments or reappointments) are for a period as defined by state law or, if permitted by state law, not to exceed three years (MS.12, SR.2).

Individual practitioner performance data must be measured, utilized, and evaluated as a part of the decision-making for appointment and reappointment. Although not specifically stated, this would apply to the individual practitioner’s respective delineation of privilege requests.

**CRC draft criteria**

The following draft criteria are intended to serve solely as a starting point for the development of an institution’s policy regarding medical toxicology. The core privileges and accompanying procedure list are not meant to be all-encompassing. They define the types of activities, procedures, and privileges that the majority of practitioners in this specialty perform. Additionally, it cannot be expected or required that practitioners perform every procedure listed. Instruct practitioners that they may strikethrough or delete any procedures they do not wish to request.

**Minimum threshold criteria for granting privileges in medical toxicology**

**Basic education:** MD or DO

**Minimal formal training:** Successful completion of an ACGME- or AOA-accredited residency\(^1\) in emergency medicine, preventive medicine, or pediatrics followed by successful completion of an accredited fellowship in medical toxicology, and/or current subspecialty certification or active participation in the examination process (with achievement of certification within \(n\) years) leading to subspecialty certification in medical toxicology by the ABEM, the ABPM, or the ABP or possession of a CAQ in medical toxicology by the AOBEM.

\(^1\)Satisfactory completion of an ACGME-accredited residency in other specialty areas is acceptable.
Required current experience: Documented evidence of the provision of inpatient or consultative services, reflective of the scope of privileges requested, for at least 50 patients during the past 12 months, or successful completion of an ACGME- or AOA-accredited residency or clinical fellowship within the past 12 months.

References

If the applicant is recently trained, a letter of reference should come from the director of the applicant’s training program. Alternatively, a letter of reference may come from the applicable department chair and/or clinical service chief at the facility where the applicant most recently practiced.

Core privileges in medical toxicology

Core privileges for medical toxicology include the ability to evaluate, treat, and provide consultation to patients of all ages with accidental or purposeful poisoning through exposure to prescription and nonprescription medications, drugs of abuse, household or industrial toxins, and environmental toxins. Areas of medical toxicology include acute pediatric and adult drug ingestion, drug abuse, addiction and withdrawal, chemical poisoning exposure and toxicity, hazardous materials exposure and toxicity, and environmental and occupational toxicology. Physicians may provide care to patients in the intensive care setting in conformance with unit policies. Privileges also include the ability to assess, stabilize, and determine the disposition of patients with emergent conditions consistent with medical staff policy regarding emergency and consultative call services. The core privileges in this specialty include the following procedures and such other procedures that are extensions of the same techniques and skills:

- Performance of history and physical exam
- Insertion and management of arterial catheters
- EKG interpretation
- Lumbar puncture
- Insertion and management of central venous catheters
- Intubation
- Insertion of chest tubes
- Ventilator management
- Insertion and management of pulmonary artery catheters

Special noncore privileges in medical toxicology

If desired, noncore privileges are requested individually in addition to requesting the core. Each individual requesting noncore privileges must meet the specific threshold criteria governing the exercise of the privilege requested, including training, required previous experience, and maintenance of clinical competence.
Reappointment

Reappointment should be based on unbiased, objective results of care according to a hospital’s quality assurance mechanism.

Applicants in medical toxicology must be able to show evidence of current demonstrated competence and an adequate volume of experience (100 patients) with acceptable results, reflective of the scope of privileges requested, for the past 24 months based on results of ongoing professional practice evaluation and outcomes. Evidence of current physical and mental ability to perform privileges requested is required of all applicants for renewal of privileges.

In addition, continuing education related to medical toxicology should be required.

For more information

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Medical toxicology

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