



<p><b>Educational Outcomes, Goals, and Objectives for Postgraduate Year Two (PGY2) Pharmacy Residencies in Internal Medicine</b></p>
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### **Overview of PGY2 Pharmacy Residencies in Internal Medicine**

The PGY2 pharmacy residency in internal medicine designed to transition PGY1 residency graduates from generalist practice to specialized practice focused on the care of adults with medical problems, primarily in the inpatient setting. Residency graduates are equipped to participate as integral members of interdisciplinary teams caring for internal medicine patients, assuming responsibility for the patient’s medication-related care. In that role they provide the team with evidence-based medication-related information and formulate that information into expert recommendations to the team for the use of medications and other therapeutic approaches.

In addition, residency graduates’ extensive patient care experience, combined with their wealth of knowledge of medical problems and their treatment, provides for pharmacists who can successfully serve health care organizations as an essential information resource to support decisions affecting the care of internal medicine patients. Their contributions can include conducting medication-use evaluations, participating in the formulary decision process, contributing to organizational medication-use policy development including the development of guidelines and protocols, and implementation of those policies. They possess advanced skills for identifying the medication-related training needs of other health care professionals caring for internal medicine patients and for delivering effective training to them and to health care professionals in training.

Graduates of pharmacy residencies in internal medicine exhibit the characteristics of practice leaders. They are experienced in writing about and presenting on internal medicine-related pharmacy topics. They are effective advocates for the needs of internal medicine patients. They have further equipped themselves for the requirements of specialty certification and can be expected to continue their pursuit of expertise in practice through self-managed continuing professional development.



## **Explanation of the Contents of This Document:**

Each of the document's objectives has been classified according to educational taxonomy (cognitive, affective, or psychomotor) and level of learning. An explanation of the taxonomies is available elsewhere.<sup>1</sup>

The order in which the required educational outcomes are presented in this document does not suggest relative importance of the outcome, amount of time that should be devoted to teaching the outcome, or sequence for teaching.

The educational outcomes, goals, and objectives are divided into those that are required and those that are elective. The required outcomes, including all of the goals and objectives falling under them, must be included in the design of all programs. The elective outcomes are provided for those programs that wish to add to the required outcomes. Programs selecting an elective outcome are not required to include all of the goals and objectives falling under that outcome. In addition to the potential elective outcomes contained in this document, programs are free to create their own elective outcomes with associated goals and objectives. Other sources of elective outcomes may include elective educational outcomes in the list provided for PGY1 pharmacy residencies and educational outcomes for training in other PGY2 areas. Each of the goals falling under the program's selection of program outcomes (required and elective) must be evaluated at least once during the resident's year.

**Educational Outcomes (Outcome):** Educational outcomes are statements of broad categories of the residency graduates' capabilities.

**Educational Goals (Goal):** Educational goals listed under each educational outcome are broad sweeping statements of abilities.

**Educational Objectives (OBJ):** Resident achievement of educational goals is determined by assessment of the resident's ability to perform the associated educational objectives below each educational goal.

**Instructional Objectives (IO):** Instructional objectives are the result of a learning analysis of each of the educational objectives. They are offered as a resource for preceptors encountering difficulty in helping residents achieve a particular educational objective. The instructional objectives falling below the educational objectives suggest knowledge and skills required for successful performance of the educational objective that the resident may not possess upon entering the residency year. Instructional objectives are teaching tools only. They are not required in any way nor are they meant to be evaluated.

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<sup>1</sup> Nimmo, CM. Developing training materials and programs: creating educational objectives and assessing their attainment. In: Nimmo CM, Guerrero R, Greene SA, Taylor JT, eds. Staff development for pharmacy practice. Bethesda, MD: ASHP; 2000.

<b>Required Educational Outcomes, Goals, and Objectives for Postgraduate Year Two (PGY2) Pharmacy Residencies in Internal Medicine</b>
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***Outcome R1: Serve as an authoritative resource on the optimal use of medications.***

Goal R1.1 Establish oneself as an organizational expert for medication-related information and resources.

OBJ R1.1.1 (Synthesis) Implement a successful strategy for earning credibility within the organization to be an authoritative resource on the medication-related care of internal medicine patients.

*IO Identify barriers for the internal medicine pharmacy specialist to earning credibility with members of the interdisciplinary team.*

*IO Identify barriers for the internal medicine pharmacy specialist to earning credibility within the organization.*

Goal R1.2 Participate in the review of existing, development of new, and implementation of the organization's policies affecting the care of internal medicine patients.

OBJ R1.2.1 (Synthesis) Contribute to the work of an organizational committee or work group concerned with the improvement of medication-use policies or guidelines.

*IO Explain how to apply evidence-based medication guidelines to the development of a medication order set.*

*IO Explain the importance of including pharmacy, nursing, and medical services in the design of an implementation strategy.*

Goal R1.3 Identify opportunities for improving the safety of aspects of the organization's medication-use system.

OBJ R1.3.1 (Application) Participate in the organization's system for reporting medication errors and adverse drug reactions.

OBJ R1.3.2 (Evaluation) Conduct a MUE focused on improvement of the organization's medication-use process.

Goal R1.4 Select core biomedical literature resources appropriate for internal medicine pharmacy practice.

OBJ R1.4.1 (Application) Use knowledge of standard resources to select core primary, secondary, and tertiary biomedical literature resources appropriate for internal medicine pharmacy practice.

*IO State sources of primary, secondary, and tertiary biomedical literature.*

*IO Compare the characteristics of each of the available resources.*

Goal R1.5 Employ advanced literature analysis skills in preparing drug information.

OBJ R1.5.1 (Synthesis) Create an efficient and effective advanced search strategy to prepare a drug information response.

*IO Explain the full range of drug information resources that are currently available.*

*IO Explain content and applicability of specialized sources of drug information.*

*IO Explain the principles for use of search engines when the search needs to be at an advanced level.*

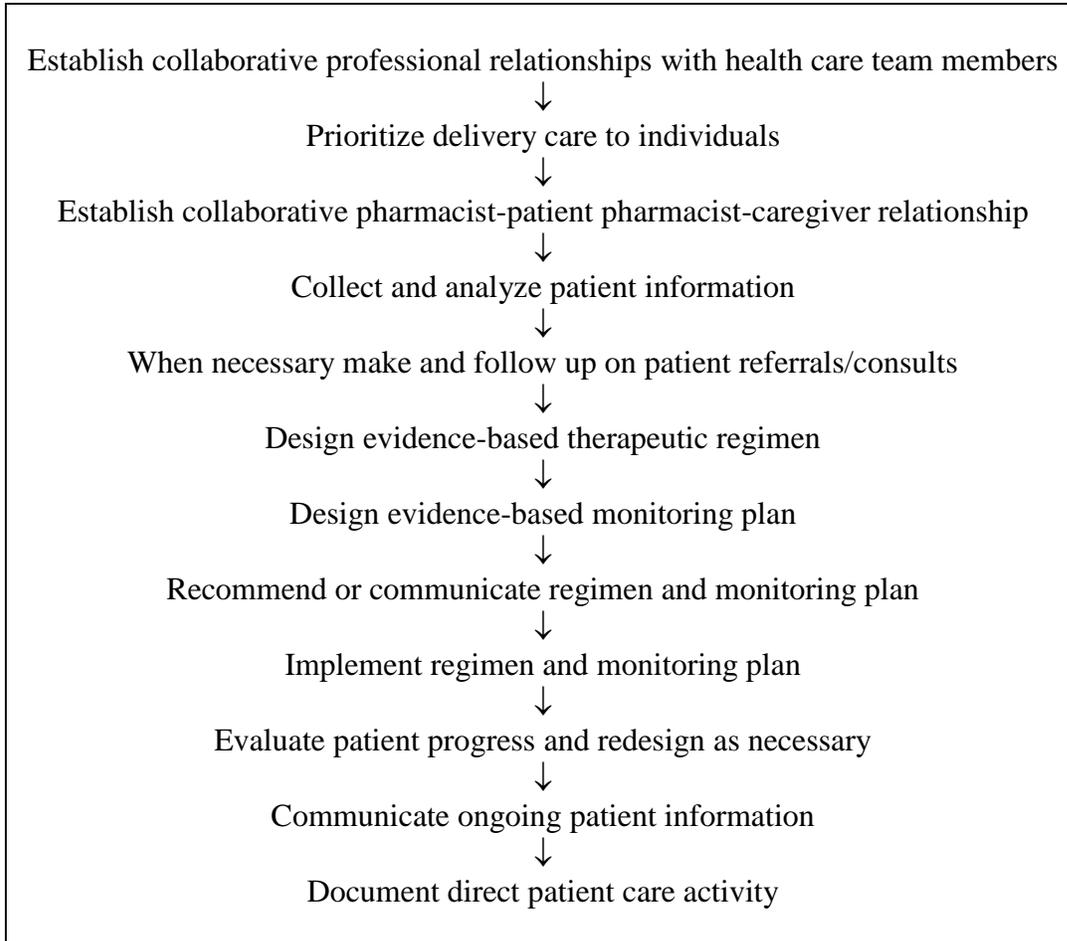


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- OBJ R1.5.2 (Analysis) Accurately identify the study design employed for a piece of biomedical literature.
  - IO Explain the key features of epidemiologic and experimental designs and the strengths and weaknesses of each.*
- OBJ R1.5.3 (Evaluation) Determine if the study design and methodology are appropriate to accomplish the objectives of a piece of biomedical literature.
- OBJ R1.5.4 (Evaluation) Accurately interpret statistical information presented in a piece of biomedical literature.
  - IO Explain the application and interpretation of advanced statistical methods.*
  - IO Determine instances in which a study conclusion is erroneously supported by data display.*
- OBJ R1.5.5 (Analysis) Identify potential sources of bias in a piece of biomedical literature.
- OBJ R1.5.6 (Evaluation) Determine the internal and external validity of a piece of biomedical literature.
- OBJ R1.5.7 (Evaluation) Determine if a study's results have applicability for hypothesizing future research or for directing patient care decisions.
- OBJ R1.5.8 (Evaluation) When presented with conflicting biomedical literature, determine the validity and applicability for a specific drug information need.
  - IO Compare and contrast the reputations and peer-review procedures of biomedical journals.*
  - IO Explain how to appraise drug information for the expertise and reputation of the author(s).*
- OBJ R1.5.9 (Evaluation) When presented with limited evidence-based biomedical literature, synthesize a reasonable response for the specific drug information need.
- OBJ R1.5.10 (Evaluation) Appraise information provided by a pharmaceutical manufacturer.
- OBJ R1.5.11 (Synthesis) Prepare an expert response to a complex drug information need.
  - IO Explain standards of care applicable to a specific drug information need.*
  - IO Explain a standardized process for documenting, storing, and retrieving drug information responses.*
- Goal R1.6 Contribute to publishing periodic newsletters or bulletins for health care providers on timely medication-related matters and medication policies.
  - OBJ R1.6.1 (Synthesis) Contribute to preparing an article for a newsletter or bulletin addressing either a medication or a medication policy.
- Goal R1.7 Assist the organization in achieving compliance with accreditation, legal, regulatory, and safety requirements related to the use of medications (e.g., The Joint Commission requirements; ASHP standards, statements, and guidelines; state and federal laws regulating pharmacy practice; OSHA regulations).
  - OBJ R1.7.1 (Evaluation) Determine appropriate activities and documentation to meet accreditation, legal, regulatory, and safety requirements for pharmacy.
    - IO Explain the influence of accreditation, legal, regulatory, and safety requirements on clinical practice.*



***Outcome R2: Optimize the outcomes of internal medicine patients by providing evidence-based, patient-centered medication therapy as an integral part of an interdisciplinary team.***



Goal R2.1 Establish collaborative professional relationships with members of the internal medicine health care team.

OBJ R2.1.1 (Synthesis) Effectively establish cooperative, collaborative, and communicative working relationships with members of the internal medicine interdisciplinary health care team.

*IO Explain the training and expected areas of expertise of the members of the interdisciplinary team with which one works.*

*IO For each of the professions with which one interacts on the interdisciplinary team, explain the profession's view of its role and responsibilities in collaborations on patient-centered care and their expectations of the pharmacist's role in collaborations on patient-centered care.*

*IO Explain the professional dynamics of the different services comprising the health care team.*



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- IO Identify the interpersonal dynamics of each member of the interdisciplinary health care team with which one works.*
- IO Explain the characteristics of a pharmacist who interacts effectively with interdisciplinary teams.*
- Goal R2.2 For a caseload of internal medicine patients, prioritize the delivery of patient care.
  - OBJ R2.2.1 (Evaluation) Appropriately prioritize the care of internal medicine patients if given limited time and multiple patient care responsibilities.
    - IO Explain factors to consider when determining priority for patient care.*
    - IO Explain how the complexity or severity of patient problems may mandate urgency of care and reordering of current priorities for care.*
    - IO Explain strategies for the delivery of efficient care.*
- Goal R2.3 Establish collaborative pharmacist-patient and pharmacist-caregiver relationships.
  - OBJ R2.3.1 (Synthesis) Establish a collaborative patient-centered pharmacist-patient and pharmacist-caregiver relationship.
    - IO Explain the importance of discussing with the patient the internal medicine pharmacy specialist's role in his/her care.*
    - IO Explain the views of diverse cultures and religions on the conceptualization of illness and its treatment.*
    - IO Explain potential barriers to relationship development with individual patients (e.g., age, mental status, education level).*
- Goal R2.4 Collect and analyze patient information.
  - OBJ R2.4.1 (Analysis) Collect and organize all patient-specific information needed by the internal medicine pharmacy specialist to anticipate, prevent, detect, and/or resolve medication-related problems and to make appropriate evidence-based, patient-centered medication therapy recommendations as part of the interdisciplinary team. (See Appendix)
    - IO Identify the types of patient-specific information the internal medicine pharmacy specialist requires to anticipate, prevent, detect, and/or resolve medication-related problems and to make appropriate evidence-based, patient-centered medication therapy recommendation.*
    - IO Explain signs and symptoms, epidemiology, risk factors, pathophysiology, clinical course, etiology, and treatment of diseases commonly encountered in internal medicine patients.*
    - IO Explain the mechanism of action, pharmacokinetics, pharmacodynamics, pharmacogenomics, pharmacoeconomics, usual regimen (dose, schedule, form, route, and method of administration), indications, contraindications, interactions, adverse reactions, and therapeutics of medications used to treat internal medicine patients.*
    - IO Where known, explain the mechanism of action, pharmacokinetics, pharmacodynamics, pharmacogenomics, pharmacoeconomics, usual regimen (dose, schedule, form, route, and method of administration), indications, contraindications, interactions, adverse reactions, and therapeutics of nontraditional medications used to treat internal medicine patients.*



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- IO Explain various forms of medication and non-medication therapy, to include life-style modification, and the use of devices for disease prevention and treatment for diseases commonly encountered in internal medicine patients.*
- IO Explain the meaning of the results of diagnostic tests commonly performed on internal medicine patients.*
- IO Explain the significance of physical findings needed to assess internal medicine patients.*

OBJ R2.4.2 (Analysis) Determine the presence of medication therapy problems in the internal medicine patient's current regimen, which may include:

1. Medication used with no medical indication
2. Patient has medical conditions for which there is no medication prescribed
3. Medication prescribed inappropriately for a particular medical condition
4. Immunization regimen is incomplete
5. Current medication therapy regimen contains something inappropriate (dose, dosage form, duration, schedule, route of administration, method of administration)
6. There is therapeutic duplication
7. Medication to which the patient is allergic has been prescribed
8. There are adverse drug- or device-related events or potential for such events
9. There are clinically significant drug-drug, drug-disease, drug-nutrient, or drug-laboratory test interactions or potential for such interactions
10. Medical therapy has been interfered with by social/recreational, nonprescription, complementary/alternative drug use by the patient or others
11. Patient not receiving full benefit of prescribed medication therapy
12. There are problems arising from the financial impact of medication therapy on the patient
13. Patient lacks understanding of medication therapy
14. Patient not adhering to medication regimen

OBJ R2.4.3 (Analysis) Create a medical problem list for the internal medicine patient.

- IO Explain the importance of identifying the patient's medical problems before making any decisions about care.*
- IO Explain how to interpret the results of diagnostic tests commonly performed on internal medicine patients.*
- IO Explain how to interpret physical findings of internal medicine patients.*

Goal R2.5 When necessary, refer patients to other health care professionals.

OBJ R2.5.1 (Evaluation) When presented with an internal medicine patient with health care needs that cannot be met by the internal medicine pharmacy specialist, make a referral/consult to the appropriate health care provider based on the patient's acuity and the presenting problem.

OBJ R2.5.2 (Synthesis) Devise a plan for follow-up for a referral/consult for a patient.

Goal R2.6 Design evidence-based therapeutic regimens.



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- OBJ R2.6.1 (Synthesis) Specify therapeutic goals for an internal medicine patient incorporating the principles of evidence-based medicine that integrate patient-specific data, disease and medication-specific information, ethics, and quality-of-life considerations.
  - IO Identify sources of evidence-based disease management and drug-use guidelines useful in the care of internal medicine patients.*
  - IO Explain situations in which the care of the patient may need to be staged using prioritization of therapeutic goals as a tool.*
- OBJ R2.6.2 (Synthesis) Design a regimen that meets the evidence-based therapeutic goals established for the internal medicine patient; integrates patient-specific information, disease and drug information, ethical issues and quality-of-life issues; and considers pharmacoeconomic principles.
  - IO Identify the appropriate literature that supports the use of a non-formulary medication in a clinical situation.*
- Goal R2.7 Design evidence-based monitoring plans.
  - OBJ R2.7.1 (Synthesis) Design an evidenced-based monitoring plan that effectively evaluates achievement of the internal medicine patient's specified therapeutic goals and monitors for potential adverse events.
    - IO State customary monitoring parameters used with therapeutic regimens commonly prescribed for internal medicine patients.*
- Goal R2.8 Recommend or communicate regimens and monitoring plans.
  - OBJ R2.8.1 (Application) Recommend or communicate a patient-centered, evidence-based therapeutic regimen and corresponding monitoring plan to other members of the interdisciplinary team and patient in a way that is systematic, logical, accurate, timely, sensitive, and secures consensus from the team and patient.
- Goal R2.9 Implement regimens and monitoring plans.
  - OBJ R2.9.1 (Application) When appropriate, initiate the patient-centered, evidence-based therapeutic regimen and monitoring plan for the internal medicine patient according to the organization's policies and procedures.
    - IO Explain the organization's policies and procedures for ordering inpatient and outpatient medications.*
    - IO Explain the organization's policies and procedures for ordering tests.*
  - OBJ R2.9.2 (Complex Overt Response) When appropriate, exercise skill in the administration or supervision of the administration of an internal medicine patient's therapeutic regimen.
  - OBJ R2.9.3 (Application) When necessary, contribute to the work of the team that secures access to drugs used in a patient's regimen.
    - IO Explain inpatient and outpatient assistance programs available for medications.*
    - IO Explain the internal medicine pharmacy specialist's role (versus other interdisciplinary team members), as practiced in one's organization, in securing payer coverage or patient assistance.*
    - IO Explain circumstances in which it may be appropriate to redesign a patient's medication regimen in order to ensure that a patient will have financially viable access to the prescribed medications.*



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- IO Explain various approaches used to adjust medication regimens in order to facilitate patient access to medications.*
- IO Explain organizational policies and procedures for securing compassionate use medications needed for an individual patient.*
- IO Explain organizational policies and procedures for securing non-formulary or restricted use medications needed for an individual patient.*
- OBJ R2.9.4 (Application) Use effective patient education techniques to provide counseling to internal medicine patients and caregivers, including information on medication therapy, adverse effects, compliance, appropriate use, handling, storage, and medication administration.
- Goal R2.10 Evaluate internal medicine patient progress and redesign regimens and monitoring plans.
  - OBJ R2.10.1 (Evaluation) Accurately assess the internal medicine patient's progress toward the therapeutic goal(s).
  - OBJ R2.10.2 (Application) Ensure that significant information regarding the internal medicine patient reaches others on the interdisciplinary team in a timely manner.
  - OBJ R2.10.3 (Synthesis) Redesign the internal medicine patient's regimen and monitoring plan as necessary, based on evaluation of monitoring data and therapeutic outcomes.
- Goal R2.11: Communicate ongoing internal medicine patient information to facilitate continuity of care.
  - OBJ R2.11.1 (Application) When given an internal medicine patient who is transitioning from one health care setting to another, communicate pertinent information to the receiving health care professionals.
    - IO Explain potential problems that may place patients at risk in various treatment settings (e.g., hospital, clinic, home) or upon change in level of care.*
    - IO Explain accrediting organizations' requirements for medication reconciliation across the continuum of care.*
    - IO Explain methods for coordinating information between multiple pharmacy and other health care workers serving the needs of patients that will facilitate the provision of medication-related care.*
    - IO Explain the importance of coordination of care between the internal medicine specialist and the community pharmacist providing medications for the patient.*
    - IO Explain methods for assuring continuity of medication-related care across all treatment settings used by a specific patient.*
- Goal R2.12: Document direct patient care activities appropriately.
  - OBJ R2.12.1 (Analysis) Appropriately select direct patient-care activities for documentation.
    - IO Explain the organization's policies and procedures for identifying activities that must be documented.*
  - OBJ R2.12.2 (Application) Use effective communication practices when documenting a direct patient-care activity.



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*IO Explain the organization's policies and procedures for documenting direct patient care activities.*

***Outcome R3: Demonstrate excellence in the provision of training and educational activities for health care professionals and health care professionals in training.***

**Goal R3.1** Provide effective education and/or training to health care professionals and health care professionals in training.

**OBJ R3.1.1** (Synthesis) Design an educational/training activity using effective educational techniques.

*IO Identify emerging issues in internal medicine pharmacy that would be suitable for interdisciplinary educational sessions (e.g., in-services, grand rounds).*

*IO Explain the differences in effective educational strategies when teaching colleagues versus residents versus students versus health professionals in other disciplines.*

*IO Explain the concept of learning styles and its influence on the design of instruction.*

*IO Explain the principles for design of instruction to meet and individual learner's needs.*

*IO Explain how to write appropriately worded educational objectives.*

*IO Explain the match between instructional delivery systems (e.g., demonstration, written materials, video) and the specific types of learning each facilitates.*

*IO Explain how to design instruction that employs strategies, methods, and techniques congruent with the objectives for education or training.*

*IO Explain effective teaching approaches for the various types of learning (e.g., imparting information, teaching psychomotor skills, inculcation of new attitudes).*

**OBJ R3.1.2** (Synthesis) Design an assessment strategy that appropriately measures the specified objectives for an education or training activity and fits the learning situation.

*IO Explain appropriate assessment techniques for assessing the learning outcomes of educational or training programs.*

**OBJ R3.1.3** (Application) Use skill in the four preceptor roles employed in practice-based teaching (direct instruction, modeling, coaching, and facilitation)<sup>2</sup>.

*IO Explain the stages of learning that are associated with each of the preceptor roles.*

**OBJ R3.1.4** (Application) Speak effectively to a large group.

*IO Explain techniques that can be used to enhance audience interest.*

*IO Explain techniques that can be used to enhance audience understanding of one's topic.*

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<sup>2</sup> Nimmo, CM. Developing training materials and programs: creating educational objectives and assessing their attainment. In: Nimmo CM, Guerrero R, Greene SA, Taylor JT, eds. Staff development for pharmacy practice. Bethesda, MD: ASHP; 2000.



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*IO Explain speaker habits that distract the audience.*

OBJ R3.1.5 (Application) Speak effectively in a small group.

***Outcome R4: Demonstrate leadership and practice management skills.***

Goal R4.1 Exhibit the ongoing development of essential personal skills of an internal medicine pharmacy practice leader.

OBJ R4.1.1 (Characterization) Practice self-managed continuing professional development with the goal of improving the quality of one's own performance through self-assessment and change.

*IO State criteria for judging one's performance of tasks that are critical in one's own practice.*

*IO Explain the role of participation in pharmacy professional organization meetings in the ongoing development of expertise in internal medicine pharmacy.*

*IO Explain the importance of staying current with pertinent internal medicine literature.*

OBJ R4.1.2 (Characterization) Demonstrate commitment to the professional practice of internal medicine pharmacy through active participation in the activities of local, state, and/or national professional organizations.

*IO Assess the relevance of membership or participation in various professional organizations associated with internal medicine pharmacy practice.*

*IO Explain the importance of contributing to the work of pharmacy professional organizations in advancing the visibility of the pharmacist's role in the medication-related care of internal medicine patients.*

OBJ R4.1.3 (Characterization) Display integrity in professional relationships and actions.

*IO Explain ethical dilemmas that may confront the internal medicine pharmacy specialist.*

*IO Explain the system of ethical reasoning employed in arriving at a particular ethical decision.*

*IO Explain ethical principles embodied in the American Pharmacists Association Code of Ethics for Pharmacists.*

*IO Explain the implications of the Belmont Report<sup>3</sup> for ethical decision-making in pharmacy.*

OBJ R4.1.4 (Synthesis) Initiate and maintain a systematic approach to documenting professional activities and accomplishments.

*IO Explain the elements of a curriculum vitae.*

*IO Explain the elements of a portfolio.*

Goal R4.2 Contribute to the leadership and management activities within the practice area.

OBJ R4.2.1 (Application) Use effective negotiation skills to resolve conflicts.

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<sup>3</sup> The Belmont Report.: Ethical Principles for the Protection of Human Subjects of Research. Report from the the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (resource on the World Wide Web). URL: <http://ohsr.od.nih.gov/guidelines/guidelines.html>. Office of Human Subjects Research, National Institutes of Health. 1979 April 18, Available from Internet. Accessed 2007April 2.



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OBJ R4.2.2 (Synthesis) Use group participation skills when leading or working as a member of a formal or informal work group.

*IO Explain methods for achieving consensus.*

*IO Explain how to create an agenda for a meeting.*

*IO Explain methods for assuring participation by all members of a group.*

*IO Explain methods for effective group leadership.*

*IO Explain behaviors that contribute to the successfulness of a group.*

*IO Explain behaviors that interfere with successful group performance.*

OBJ R4.2.3 (Synthesis) When the opportunity exists, participate in writing a proposal for a medication-related service that meets a perceived need of the health system and its patients.

Goal R4.3 Exercise practice leadership.

OBJ R4.3.1 (Characterization) Demonstrate a commitment to advocacy for the optimal care of patients through the assertive and persuasive presentation of patient care issues to members of the health care team, the patient, and/or the patient's representative(s).

*IO Explain appropriate ways to advocate for patients.*

OBJ R4.3.2 (Characterization) Display initiative in preventing, identifying, and resolving pharmacy-related patient care problems.

OBJ R4.3.3 (Comprehension) Explain the nature of mentoring in pharmacy, its potential connection with achievement, and the importance of being willing to serve as a mentor to appropriate individuals.

OBJ R4.3.4 (Comprehension) Explain the general processes of establishing and maintaining a PGY2 pharmacy residency in internal medicine.

***Outcome R5: Contribute to the body of pharmacy knowledge in internal medicine.***

Goal R5.1 Conduct an internal medicine pharmacy-related research project using effective research and project management skills.

OBJ R5.1.1 (Synthesis) Identify a topic of significance for an internal medicine pharmacy-related research project.

*IO Explain the types of resident projects (e.g., service, teaching, prospective, retrospective, clinical trials) that will meet residency program project requirements and timeframe.*

*IO Explain how one determines if a potential project topic is of significance in one's particular practice setting.*

*IO Explain how to conduct an efficient and effective literature search for the background analysis.*

*IO Explain how to generate a research question(s) to be answered by an investigation.*

OBJ R5.1.2 (Synthesis) Formulate a feasible design for an internal medicine pharmacy-related research project.

*IO Explain the elements of a project proposal.*

*IO Explain how to identify those health care personnel who will be affected by the conduct of the project and strategies for gaining their cooperation.*



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- IO Explain how to determine a timeline with suitable milestones that will result in project completion by an agreed upon date.*
- IO Explain various methods for constructing data collection tools.*
- OBJ R5.1.3 (Synthesis) Secure any necessary approvals, including IRB, for an internal medicine pharmacy-related research project.
  - IO Explain how to identify stakeholders who must approve a particular project.*
  - IO Explain the components that make up a budget for a project.*
  - IO Explain strategies for seeking funding for a project.*
  - IO Explain the role of the IRB in the approval process.*
- OBJ R5.1.4 (Synthesis) Implement an internal medicine pharmacy-related research project as specified in its design.
  - IO Explain strategies for keeping one's work on a project at a pace that matches with the projected timeline.*
  - IO Given a particular residency project, explain methods for organizing and maintaining project materials and documentation of the project's ongoing implementation.*
  - IO Explain methods for data analysis.*
  - IO Explain issues surrounding confidentiality of patient information accessed for a project.*
- OBJ R5.1.5 (Synthesis) Effectively present the results of an internal medicine pharmacy-related research project.
- OBJ R5.1.6 (Synthesis) Use correct grammar, punctuation, spelling, style, and formatting conventions to prepare a written summary of an internal medicine pharmacy-related research project.
  - IO Given a particular residency project ready for presentation, explain the type of manuscript style appropriate to the project and criteria to be met when using that style.*
- Goal R5.2 Engage in the publication process.
  - OBJ R5.2.1 (Comprehension) Explain the benefits, to the practitioner and the profession, of contributing to the pharmacy literature.
  - OBJ R5.2.2 (Synthesis) Write a research article, review, or case report that is suitable for publication.
    - IO Use a standard style for biomedical journals in the preparation of research articles, reviews, or case reports submitted for publication.*
    - IO Given a specific article, identify appropriate journals to which that article might be submitted for publication.*
    - IO Given an identified topic related to pharmacy practice, appraise the potential to publish an article on that topic.*
    - IO Explain the rules governing who may declare authorship of a given work.*
  - OBJ R5.2.3 (Application) Follow the submission requirements of an appropriate peer-reviewed publication to submit a manuscript for publication.
  - OBJ R5.2.4 (Evaluation) Participate in the peer review of an internal medicine pharmacy professional's article submitted for publication or presentation.
    - IO Explain sources of information on the components of a peer review.*

**Outcome R6: Evaluate, manage, and improve the medication-use process.**

Goal R6.1 Contribute to the management of the organization's formulary.

OBJ R6.1.1 (Evaluation) Write a drug therapy monograph based on an analytical review of pertinent biomedical literature, including a safety assessment, a comparative therapeutic assessment, and cost analysis.

*IO State the elements of a comparative review.*

*IO State sources to consult in the preparation of a comparative review.*

*IO Explain the importance of including consideration of efficacy, safety, and cost in the preparation of reviews.*

OBJ R6.1.2 (Evaluation) Make recommendations for drug class decisions based on comparative reviews.

OBJ R6.1.3 (Synthesis) Formulate effective strategies for communicating formulary restrictions to providers.

*IO Explain routes of communication of formulary information.*

*IO Identify instances when formulary changes should be communicated immediately.*

OBJ R6.1.4 (Evaluation) When presented with a real or hypothetical drug shortage, identify appropriate alternative medications.

*IO State resources for identifying medications in short supply.*

*IO Explain the organization's system for communicating information regarding drug shortages.*

*IO Explain a strategy for making optimal choices for alternative medications.*

OBJ R6.1.5 (Evaluation) When the needs of a particular patient warrant, determine if a non-formulary medication should be considered for therapy.

*IO Identify the appropriate literature that supports the use of a non-formulary medication in a clinical situation.*

*IO Explain the organization's system for approving, obtaining, and handling non-formulary medication used by patients.*

Goal R6.2 Participate in the review of existing and development of new evidence-based medication-related guidelines.

OBJ R6.2.1 (Analysis) Identify the need for an evidence-based medication-related guideline for use in the care of internal medicine patients by comparing the applicability of existing organizational or published guidelines to the needs of your own organization.

OBJ R6.2.2 (Synthesis) Participate in the development of a medication-related guideline based on best available evidence and the characteristics of the local environment and patients.

*IO Explain how level of evidence is determined.*

OBJ R6.3 (Synthesis) Participate in the implementation of a medication-related guideline.

*IO Explain the importance of including pharmacy, nursing, and medical services in the design of an implementation strategy.*

OBJ R6.4 (Evaluation) Assess the results of implementing a medication-related guideline.



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**Goal R6.3** Contribute to efforts to improve the safety of aspects of the organization's medication-use system.

**OBJ R6.3.1** (Analysis) When applicable, participate in a root cause analysis (RCA) of a medication error.

**OBJ R6.3.2** (Analysis) When applicable, participate in a failure mode and effect analysis (FMEA) of a proposed new medication-use process.

**OBJ R6.3.3** (Application) Participate in the organization's system for reporting medication errors and adverse drug reactions.

<p align="center"><b>Elective Educational Outcomes, Goals, and Objectives for Postgraduate Year Two (PGY2) Pharmacy Residencies in Internal Medicine</b></p>
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**Outcome E1: Demonstrate skills required to function in an academic setting.**

Goal E1.1 Understand faculty roles and responsibilities.

OBJ E1.1.1 (Comprehension) Explain variations in the expectations of different colleges/schools of pharmacy for teaching, practice, research, and service.

*IO Discuss how the different missions of public versus private colleges/schools of pharmacy can impact the role of faculty members.*

*IO Discuss maintaining a balance between teaching, practice, research and service.*

*IO Discuss the relationships between scholarly activity and teaching, practice, research and service.*

OBJ E1.1.2 (Analysis) Explain the role and influence of faculty in the academic environment.

*IO Explain the responsibilities of faculty in governance structure (e.g. the faculty senate, committee service).*

*IO Describe the responsibilities of faculty (e.g. curriculum development and committee service) related to teaching, practice, research, and service roles.*

OBJ E1.1.3 (Comprehension) Describe the academic environment.

*IO Describe how the decisions by university and college administration impact the faculty.*

*IO Discuss outside forces (e.g. change in the profession, funding source, accreditation requirements) that impact administrator and faculty roles.*

OBJ E1.1.4 (Comprehension) Describe the types and ranks of faculty appointments.

*IO Explain the various types of appointments (e.g. non-tenure, tenure-track, and tenured faculty).*

*IO Differentiate among the various ranks of faculty (e.g. instructor, assistant professor, associate professor, full professor).*

*IO Discuss the role and implications of part-time and adjunct faculty as schools continue to expand and faculty shortages occur.*

OBJ E1.1.5 (Comprehension) Discuss the promotion and/or tenure process for each type of appointment.

*IO Identify the types of activities that are considered in the promotion process.*

*IO Identify the types of activities that are considered for tenure.*

OBJ E1.1.6 (Application) Identify resources available to help develop academic skills.

*IO Explain the role of academic-related professional organizations (e.g. AACP) in faculty professional development.*

*IO Identify resources to help develop teaching skills and a teaching philosophy.*



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- OBJ E1.1.7 (Comprehension) Explain the characteristics of a typical affiliation agreement between a college of pharmacy and a practice site (e.g., health system, hospital, clinic, retail pharmacy).
- IO Explain how the political environments of either a college or a practice site may affect the other.*
- Goal E1.2 Exercise teaching skills essential to pharmacy faculty.
- OBJ E1.2.1 (Synthesis) Develop an instructional design for a class session, module, or course.
- IO Construct a student-centered syllabus.*
  - IO Construct educational objectives for a class session, module, or course that is appropriate to the audience.*
  - IO Identify appropriate instructional strategies for the class session, module, or course to achieve the objectives.*
  - IO Consider assessment tools that measure student achievement of the educational objectives.*
- OBJ E1.2.2 (Synthesis) Prepare and deliver didactic instruction on a topic relevant to the specialized area of pharmacy residency training.
- IO Identify educational technology that could be used for a class session, module, or course (e.g., streaming media, course management software, audience response systems).*
  - IO Create instructional materials appropriate for the topic and audience.*
  - IO Identify strategies to deal with difficult learners.*
  - IO Given feedback from teaching evaluations (e.g. student and or peer), devise a plan to incorporate improvements in future instruction.*
- OBJ E1.2.3 (Application) Develop and deliver cases for workshops and/or exercises for laboratory experiences.
- IO Identify the appropriate level of case-based teachings for small group instruction.*
  - IO Identify appropriate exercises for laboratory experiences.*
  - IO Provide appropriate and timely feedback to improve performance.*
- OBJ E1.2.4 (Application) Serve as a preceptor or co-preceptor utilizing the four roles employed in practice-based teaching (direct instruction, modeling, coaching and facilitation).
- IO Assess the learner's skill level to determine the appropriate preceptor strategy for providing practice-based teaching.*
  - IO Given performance-based criteria, identify ways to provide constructive feedback to learners.*
  - IO Develop strategies to promote professional behavior.*
  - IO Identify strategies to deal with difficult learners in the practice setting.*
  - IO Given a diverse learner population, identify strategies to interact with all groups with equity and respect.*
- OBJ E1.2.5 (Analysis) Develop a teaching experience for a practice setting (e.g., introductory or advanced pharmacy experience).
- IO Create educational goals and objectives to be achieved.*



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- IO Develop activities that will allow achievement of identified educational goals and objectives.*
- IO Identify how and when feedback should be provided.*
- IO Identify other preceptors for the experience, if appropriate.*
- IO Determine training that might be needed for the preceptors to deliver student education.*
- IO Identify potential challenges of precepting and providing patient care services simultaneously.*
- OBJ E1.2.6 (Synthesis) Design an assessment strategy that appropriately measures the specified educational objectives for the class session, module, course, or rotation.
  - IO Identify appropriate techniques for assessing learning outcomes in various educational settings [e.g., written examinations, oral examinations, practical examinations, Objective Structured Clinical Examination (OSCE)].*
  - IO Develop examination questions to assess the knowledge, skills, attitudes and behaviors that are appropriate to the learner's level and topic.*
  - IO Discuss the various methods for administering examination questions (e.g., computerized testing, paper testing).*
- OBJ E1.2.7 (Evaluation) Create a teaching portfolio.
  - IO Define the concept of a teaching portfolio and describe its primary purpose*
  - IO Outline the steps in building a teaching portfolio.*
  - IO Develop a personal teaching philosophy to guide one's teaching efforts and facilitate student learning.*
- OBJ E1.2.8 (Evaluation) Compare and contrast methods to prevent and respond to academic and profession dishonesty.
  - IO Evaluate physical and attitudinal methods to prevent academic dishonesty.*
  - IO Discuss methods of responding to incidents of academic dishonesty.*
  - IO Discuss the role of academic honor committees in cases of academic dishonesty.*
  - IO Identify examples and methods to address unprofessional behavior in learners.*
- OBJ E1.2.9 (Comprehension) Explain the relevance of copyright laws to developing teaching materials.
  - IO Discuss copyright regulations as related to reproducing materials for teaching purposes.*
  - IO Discuss copyright regulations as related to linking and citing on-line materials.*

**Outcome E2: Conduct outcomes research.**

Goal E2.1 Contribute to internal medicine pharmacy clinical, humanistic and economic outcomes analyses.

- OBJ E2.1.1 (Evaluation) Contribute to prospective clinical, humanistic and/or economic outcomes analysis.



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- IO Explain the principles and methodology of basic pharmacoeconomic analyses.*
  - IO Explain the purpose of a prospective clinical, humanistic or economic outcomes analysis.*
  - IO Explain study designs appropriate for a prospective clinical, humanistic and economic outcomes analysis.*
  - IO Explain the technique and application of modeling.*
  - IO Explain the types of data that must be collected in a prospective clinical, humanistic and economic outcomes analysis.*
  - IO Explain possible reliable sources of data for a clinical, humanistic and economic outcomes analysis.*
  - IO Explain methods for analyzing data in a prospective clinical, humanistic and economic outcomes analysis.*
  - IO Explain how results of a prospective clinical, humanistic and economic outcomes analysis can be applied to internal business decisions and modifications to a customer's formulary or benefit design.*
- OBJ E2.1.2 (Evaluation) Contribute to retrospective clinical, humanistic, and/or economic outcomes analysis.
- IO Explain the purpose of a retrospective clinical, humanistic or economic outcomes analysis.*
  - IO Explain study designs appropriate for a retrospective clinical, humanistic and economic outcomes analysis.*
  - IO Explain the types of data that must be collected in a retrospective clinical, humanistic and economic outcomes analysis.*
    - IO Explain the content and utilization of reports and audits produced by the pharmacy department.*
  - IO Explain possible reliable sources of data for a retrospective clinical, humanistic and economic outcomes analysis.*
  - IO Explain methods for analyzing data in a retrospective clinical, humanistic and economic outcomes analysis.*
  - IO Explain the impact of limitations of retrospective data on the interpretation of results.*
  - IO Explain how results of a retrospective clinical, humanistic and economic outcomes analysis can be applied to internal business decisions and modifications to a customer's formulary or benefit design.*

**Outcome E3: Contribute to the organization's management of emergency situations.**

Goal E3.1 Participate in the management of medical emergencies.

- OBJ E3.1.1 (Synthesis) Exercise skill as a team member in the management of a medical emergency according to the organization's policies and procedures.
  - IO Explain appropriate medication therapy in medical emergency situations.*
  - IO Explain unique considerations when preparing and dispensing medications and calculating doses during a medical emergency.*
- OBJ E3.1.2 (Complex Overt Response) When administration is allowed by the organization, exercise skill in the administration of emergency medications.

Goal E3.2 Understand the role of the internal medicine pharmacy specialist in public health initiatives.

OBJ E3.2.1 (Comprehension) Explain the internal medicine pharmacy specialist's role in the development of emergency protocols for public health disasters (e.g., natural disaster, bioterrorism, epidemic).

OBJ E3.2.2 (Comprehension) Explain the role of the internal medicine pharmacy specialist in advocacy for vaccination.

*IO Explain the importance of vaccination in the prevention and control of the spread of infectious diseases.*

*IO Explain how to secure credentials for administering vaccinations.*

***Outcome E4: Demonstrate additional skills that contribute to practicing effectively in the health care environment.***

Goal E4.1 Exhibit additional personal skills of an internal medicine pharmacy practice leader.

OBJ E4.1.1 (Synthesis) Devise an effective plan for balancing professional and personal life.

*IO Explain the importance of balancing professional and personal life.*

*IO Explain potential negative consequences of failure to achieve balance in professional and personal life.*

*IO Explain various approaches advocated for achieving balance in one's life.*

OBJ E4.1.2 (Application) Observe the requirements of the organization's policy in all interactions with the pharmaceutical industry.

*IO Explain the potential conflicts inherent in the objectives of one's health care organization and the objectives of a pharmaceutical industry representative.*

OBJ E4.1.3 (Characterization) Display respect for patients and others with whom one works.

OBJ E4.1.4 (Characterization) Accept responsibility for one's share of the work.

***Outcome E5: Exercise additional skills for contributing to the body of internal medicine knowledge.***

Goal E5.1 Contribute to the dissemination of knowledge of internal medicine.

OBJ E5.1.1 (Synthesis) Design an effective poster for the presentation of a specific topic.

*IO Explain the types of content that should be included in a poster.*

*IO Explain the rules for visual presentation of poster material.*

*IO Explain resources that can be used to generate poster materials.*

OBJ E5.1.2 (Synthesis) Exercise skill in responding to questions occurring during the presentation of a poster.

OBJ E5.1.3 (Evaluation) Participate in the peer review of an internal medicine pharmacy professional's article submitted for publication or presentation.

*IO Explain sources of information on the components of a peer review.*



***Outcome E6: Where the internal medicine pharmacy practice is within a setting that allows pharmacist privileging, successfully apply for privileging.***

Goal E6.1 Successfully petition for privileging as an internal medicine pharmacy practitioner.

OBJ E6.1.1 (Application) Follow established procedures to successfully apply (may be a hypothetical application if not permitted at the site) for privileging as an internal medicine pharmacy practitioner.

*IO Explain the importance of privileging and how that influences practice.*

*IO State the practice setting's policy for applying to be privileged as an internal medicine pharmacy practitioner.*

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The effective date for implementation of these educational outcomes, goals and objectives is commencing with the entering resident class of 2009.

## Appendix

The resident will explain signs and symptoms, epidemiology, risk factors, pathogenesis, natural history of disease, pathophysiology, clinical course, etiology, and treatment of diseases and conditions listed below. The resident will also have experience managing patients with these diseases and conditions.

The resident will explain the mechanism of action, pharmacokinetics, pharmacodynamics, pharmacogenomics, pharmacoeconomics, usual regimen (dose, schedule, form, route, and method of administration), indications, contraindications, interactions, adverse reactions, and therapeutics of medications and non-traditional therapies, where relevant, that are applicable to the diseases and conditions listed below.

The resident will explain various forms of non-medication therapy, including life-style modification and the use of devices for disease prevention and treatment, for diseases and conditions listed below.

### **Bone/Joint and Rheumatology**

#### Required

- Connective tissue disorders
- Gout/Hyperuricemia
- Osteoarthritis
- Osteoporosis
- Rheumatoid arthritis

### **Cardiovascular**

#### Required

- Acute coronary syndromes (excluding AMI)
- Acute myocardial infarction
- Advanced cardiac life support
- Atrial arrhythmias
- Cerebral ischemia (including ischemic stroke)
- Chronic coronary artery disease
- Disorders of lipid metabolism
- Heart failure
- Hypertension
- Peripheral arterial (atherosclerotic) disease
- Pulmonary arterial hypertension
- Valvular heart disease
- Venous embolism and thrombosis
- Ventricular arrhythmias

## **Critical Care**

### Elective

- Adult respiratory distress syndrome
- Anaphylaxis
- Burns
- ICU sedation/paralysis/delirium
- Sepsis/shock
- Stress ulcer prophylaxis
- Toxicology (drug overdoses)
- Trauma/surgery

## **Dermatologic**

### Elective

- Acne
- Decubitus ulcers
- Dermatitis
- Psoriasis
- Urticaria

## **Endocrine**

### Required

- Adrenal disorders
- Diabetes insipidus
- Diabetes mellitus
- Diabetic ketoacidosis
- Disorders of pituitary gland (e.g., GH deficiency, SIADH, acromegaly)
- Metabolic syndrome
- Obesity
- Parathyroid disorders
- Relative adrenal insufficiency
- Thyroid disorders

### Elective

- Polycystic ovarian syndrome

## **Eyes, Ears, Nose, and Throat**

### Elective

- Allergic rhinitis
- Glaucoma

## **Fluid and Electrolyte/Nutrition**

### Required

- Acid-base disorders
- Electrolyte abnormalities
- Nutrition support

## **Gastrointestinal**

### Required

- Chronic liver disease and cirrhosis
- Constipation
- Diarrhea
- Gastroesophageal reflux disease
- Hepatitis
- Inflammatory bowel disease
- Irritable bowel syndrome
- Motility disorders
- Nausea/vomiting
- Pancreatitis
- Peptic ulcer disease
- Upper gastrointestinal bleeding

### Elective

- Malabsorption syndrome

## **Genitourinary**

### Required

- Benign prostatic hyperplasia

### Elective

- Sexual dysfunction
- Urinary incontinence

## **Hematologic**

### Required

- Anemias
- Clotting factor disorders
- Disseminated intravascular coagulation
- Drug-induced hematologic disorder
- Sickle cell disease
- Venous thromboembolism

## **Immunologic**

### Required

- Allergic reactions
- Stevens-Johnson syndrome

### Elective

- Angioedema
- Immunodeficiency diseases
- Organ transplantation

## **Infectious Diseases**

### Required

- Antimicrobial prophylaxis



- Bone and joint infections
- Central nervous system infections
- Community acquired pneumonia
- Febrile neutropenia
- Gastrointestinal infections
- Human immunodeficiency virus infection
- Infectious endocarditis
- Intra-abdominal infections
- Mycobacterial diseases
- Nosocomial pneumonia
- Other viral diseases
- Sexually transmitted diseases
- Skin and soft tissue infections
- Systemic fungal infections
- Upper respiratory tract infections
- Urinary tract infections

Elective

- Ear infections
- Gynecologic infections
- Pelvic inflammatory diseases
- Prostatitis

**Neurological**

Required

- Acute pain
- Central nervous system hemorrhage
- Chronic pain
- Dementia
- Epilepsy
- Headache/migraine
- Parkinson's disease
- Peripheral neuropathy
- Status epilepticus

Elective

- Neuromuscular diseases
- Spinal-cord injuries/abnormalities
- Tremors

**Obstetrics/Gynecology**

Elective

- Contraception
- Menopause
- Menstrual disorders
- Pregnancy and lactation
- Pregnancy-related disease

## **Oncology**

### Elective

- Breast cancer
- Leukemia/lymphomas
- Lung cancer
- Other solid organ tumors
- Prostate cancer
- Skin cancer
- Supportive care (e.g., preventing / treating complications associated with malignancy or treatment)

## **Psychiatric**

### Required

- Anxiety disorders
- Bipolar disorders
- Depressive disorders
- Drug/alcohol overdose/withdrawal
- Schizophrenia
- Sleep disorders
- Substance abuse

### Elective

- Attention deficit disorders (with or without hyperactivity)

## **Renal**

### Required

- Acute renal failure
- Chronic renal failure
- Dialysis (managing associated complications and drug dosing)
- Glomerulonephritis
- Nephrolithiasis

## **Respiratory**

### Required

- Asthma
- Chronic obstructive airway disease (other than asthma)
- Sleep apnea

### Elective

- Cystic fibrosis