OVERALL EDUCATIONAL GOALS FOR ANESTHESIOLOGY RESIDENTS CA-1 THROUGH CA-3

PROGRAM OVERVIEW
Welcome to the University of Minnesota Anesthesiology Residency. As Program Director I can proudly say that our faculty is fully committed to educating our residents to become outstanding anesthesiologists able to practice in a wide variety of clinical settings, with a wide variety of patient populations. We are dedicated to providing residents with knowledge, skills and attitudes that will allow them, not only to practice their specialty in an expert manner, but also to participate in the development, improvement, and promotion of safe, patient-centered health care systems.

DEPARTMENT EDUCATIONAL MISSION
Today’s anesthesiologist works as a team leader in the operating room, as well as in the intensive care unit, labor and delivery suite, preoperative assessment center, post anesthesia recovery unit, and acute and chronic pain management clinics. Our residents engage a breadth of experiences optimized to develop the knowledge, skills and attitudes required to practice in all ten recognized subspecialties within anesthesiology.

The educational mission of the Department of Anesthesiology at the University of Minnesota is to train highly qualified anesthesiology consultants as defined by the American Board of Anesthesiology:
A physician who:
- Possesses knowledge, judgment, adaptability, clinical skills, technical facility and personal characteristics to carry out the entire scope of anesthesiology practice;
- Is able to communicate effectively with peers, patients and their families, and others in the medical community;
- Can serve as an expert in matters related to anesthesiology, deliberate with others, provide advice and defend opinions in all aspects of the specialty of anesthesiology; and
- Is able to function as the leader of the anesthesiology care team.

DESCRIPTION OF THE EDUCATIONAL PROGRAM
ACGME defines residency as an essential dimension of the transformation of the medical student to the independent practitioner along the continuum of medical education. In order to assure each resident’s development of the skills, knowledge, and attitudes required to enter the unsupervised practice of medicine and establish a foundation for continued professional growth, our residency program is committed to provide educational environment in which residents expand their knowledge within all three domains of learning, as defined by Benjamin Bloom in 1940s:

I. Cognitive Domain: categorizes subject matter according to its level of thought and the nature of mastering it.
II. Psychomotor Domain: guides development of objectives at progressive levels of behaviors from observation to mastery of a physical...
Department of Anesthesiology

Goals and Objectives

skills.

**III. Affective Domain**: attitude/commitment (confidence and willingness) that encourages the behavior and an environment that allows or supports the behavior.

We also aim to help residents understand the life-long continuum of medical education which will allow them to progress through all the five levels of education, proposed by Dreyfus model of skill acquisition:

**I. Novice** – they follow the rule and only feel responsible to follow the rules

**II. Advanced beginner** – they begin to create and identify conditional rules, but do not experience personal responsibility.

**III. Competent** – they begin to sort information by relevance, shape contexts and conditions. Sense of responsibility arises from actively making decisions.

**IV. Proficient** – they use pattern recognition to assess what to do and rules to determine how to do it. Sense of responsibility increases with experience.

**V. Expert** – pattern recognition extends to plan as well as action. Responsibility extends to others and the environment.

In order to successfully complete anesthesiology residency, each resident is expected to achieve knowledge, skills and attitudes necessary for adequate performance in anesthesiology profession in all six ACGME defined general competencies:

**I. Knowledge:**
Demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care; and as specified by each RRC.

**II. Patient Care:**
Provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health and as specified by each RRC.

**III. Interpersonal & Communication Skills**
Demonstrate interpersonal and communication skills that result in effective exchange of information and collaboration with patients, their patients’ families, and health professionals. Residents should be able to:
- Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds
- Communicate effectively with physicians, other health professionals, and health related agencies
- Act in a consultative role to other physicians and health professionals
- Work effectively with others as a member or leader of a health care team or other professional group
- Maintain comprehensive, timely, and legible medical records, if applicable

**IV. Professionalism**
Demonstrate a commitment to carrying out professional responsibilities, and an adherence to ethical principles. Residents should:
Goals and Objectives

- Demonstrate compassion, integrity and respect for others; responsiveness to patient needs that supersedes self-interest
- Demonstrate respect for patient privacy and autonomy
- Demonstrate accountability to patients, society and the profession
- Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

V. Practice Based Learning and Improvement
Investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. Residents should be able to:
- Identify strengths, deficiencies, and limits in one’s knowledge and expertise
- Set learning and improvement goals
- Identify and perform appropriate learning activities
- Incorporate formative evaluation feedback into daily practice
- Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement
- Locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems
- Use information technology to optimize learning
- Participate in the education of patients, families, students, residents and other health professionals

VI. Systems Based Practice
Residents should be able to:
- Work effectively in various health care delivery settings and systems relevant to their clinical specialty
- Coordinate patient care within the health care system relevant to their clinical specialty
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate
- Advocate for quality patient care and optimal patient care systems
- Work in inter-professional teams to enhance patient safety and improve patient care quality
- Participate in identifying system errors and implementing potential systems solutions

OVERALL GOALS AND OBJECTIVES
The goals of the University of Minnesota Anesthesiology Residency Program are to educate resident physicians in all areas of anesthesiology knowledge, clinical & technical skills and professional attitudes so that they may graduate as accomplished anesthesiologists who meet the requirements to become certified by the ABA, and who are proficient to practice anesthesiology in either an academic institution or in private clinical practice.

Within this overall goal there are individual goals and objectives set out for each clinical year and each rotation that residents progress through during their training:
Goals and Objectives

CA-1
The resident completing the first year of clinical anesthesia training should establish standards and habits that facilitate the assimilation of basic science, clinical science and clinical skills necessary for completion of residency training in anesthesiology. Mastery of clinical skills is expected to be at novice level. The focus is on establishment of standards of professional performance.

CA-2
The second year of the three-year clinical anesthesia continuum is designed to present the resident with cases of increasing complexity. The year is predominantly divided into rotations that represent sub-disciplines of anesthesiology. The purposes of the subspecialty rotations are to focus the resident’s reading and clinical training on both the theoretical and basic science material of these areas. We expect residents to start developing skill, knowledge and attitudes of advance beginner. At the end of the CA-2 year, residents should be ascending to the role of consultant in anesthesiology. The knowledge base and skill level attained should facilitate progression to the most sophisticated and challenging cases.

CA-3
The CA-3 year offers great flexibility in its goal of providing residents with extensive experience caring for the most critically ill patients. The CA-3 year is a distinctly different experience from that of the CA-1 and 2 years. Advanced rotations are available and experience can be gained in techniques such as transesophageal echocardiography. During the CA-3 year residents are expected to achieve the level of a competent anesthesia provider with fully developed knowledge, clinical skills and attitudes. The goal is for residents to handle progressively more responsibility to prepare them to practice independently as a consultant anesthesiologist.
GOALS AND OBJECTIVES

Introduction:
These are the graduated general goals and objectives for each year of your residency. Each rotation you undertake as a resident will have its own set of rotation-specific goals and objectives which can be more rigorous than the ones presented here, however, the following should be seen as the baseline expected of each residency year. The resident completing the first year of clinical anesthesia training should establish standards and habits that facilitate the assimilation of basic science, clinical science and clinical skills necessary for completion of residency training in anesthesiology. Mastery of clinical skills is expected to be at novice level. The focus is on establishment of standards of professional performance.

GOALS:
- To train residents who are capable of providing high quality anesthesia care based on principles of teamwork and collaboration for general surgical and nonsurgical procedures;
- To train residents who use the bio-psychosocial model and life-long learning principles in providing high quality care to patients including preoperative assessment and preparation of patients for general anesthesia, provision of anesthesia for basic surgical procedures, relief and prevention of pain during and following surgical procedures, clinical management and teaching of cardiac and pulmonary resuscitation, evaluation of respiratory function and application of respiratory therapy.

OBJECTIVES (by ACGME Competency)

<table>
<thead>
<tr>
<th>Developmental Milestone Objective</th>
<th>Training Level</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>Patient Care</td>
<td></td>
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<tr>
<td>Clinical Skills and Reasoning:</td>
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<tr>
<td>Use of clinical skills of interviewing and physical examination to perform a thorough preoperative assessment (perception to mechanism or complex overt response)</td>
<td>6 months</td>
<td>o Direct Observation</td>
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<td>o Simulation</td>
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<td>o Chart-review</td>
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<tr>
<td>Use of preoperative laboratory and imaging techniques in accordance with preoperative evaluation guidelines (perception to mechanism or complex overt response)</td>
<td>6 months</td>
<td>o Case logs</td>
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</table>
Goals and Objectives

- Based on preoperative assessment formulates and discusses anesthetic management plan for a general surgical patient and an obstetric patient (perception to mechanism or complex overt response) - 12 months

- Formulates and discusses postoperative management plan with specific emphasis on pain and PONV management (perception to mechanism or complex overt response) - 6-12 months

- Manages critically ill patients with help of senior residents and faculty (perception to mechanism or complex overt response) - 12 months

Technical/Device Related Skills

- Prepares anesthesia work area in an organized, systematic fashion (perception to mechanism or complex overt response) - 1-2 months

- Direct Observation

- Simulation

- Chart review

- Case logs

- Draws, checks and labels medications as recommended by JACHO, uses two-person check for drugs that require it (perception to mechanism or complex overt response) - 1 month

- Checks out and trouble-shoots the anesthesia machine properly using the current FDA published “Anesthesia Apparatus Checkout Recommendations” (perception to mechanism or complex overt response) - 1-2 months

- Skillfully uses anesthesia machine monitors, basic monitoring equipment and adjunct monitoring equipment. (perception to mechanism or complex overt response) - 6 months

- Skillfully uses syringe pump, intravenous infusion pump, epidural pump, etc (perception to mechanism or complex overt response) - 3-12 months

- Skillfully uses rapid fluid infusing and blood warming devices (perception to mechanism or complex overt response) - 12 months

Patient Management

- Determines and administers the appropriate doses of anesthetic agents needed to induce anesthesia for a general adult surgical patient (perception to mechanism or complex overt response) - 6 months

- Direct Observation

- Simulation

- Chart review

- Case logs

- Skillfully performs standard tracheal intubation in an average adult (perception to mechanism or complex overt response) - 6 months
**Department of Anesthesiology**  
**Goals and Objectives**

- Can skillfully place peripheral venous catheter (perception to mechanism or complex overt response)  
  - Training Level: 3-6 months
- Can skillfully place arterial line, central line in an average adult (perception to mechanism or complex overt response)  
  - Training Level: 12 months
- Manages maintenance of anesthesia for an average adult (perception to mechanism or complex overt response)  
  - Training Level: 12 months
- Manages emergence from anesthesia including postoperative pain management after general surgery in an average adult (perception to mechanism or complex overt response)  
  - Training Level: 12 months
- Skillfully and safely performs neuraxial anesthesia (perception to mechanism or complex overt response)  
  - Training Level: 12 months
- Maintains orderly patient medical records (perception to mechanism or complex overt response)  
  - Training Level: 1 month
- Effectively transfers care to a secondary provider (perception to mechanism or complex overt response)  
  - Training Level: 2-4 months

**Medical Knowledge**

<table>
<thead>
<tr>
<th>Developmental Milestone Objective</th>
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<th>Assessment</th>
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</thead>
<tbody>
<tr>
<td>Defines anesthesia and sedation (knowledge to application)</td>
<td>1-2 months</td>
<td>Introductory lecture series test</td>
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<tr>
<td>Describes mechanisms of anesthetic effects (knowledge to application)</td>
<td>1-2 months</td>
<td>Anesthesia knowledge test</td>
</tr>
<tr>
<td>Discusses pharmacodynamic and pharmacokinetic principles of anesthetic medications, opiates, neuromuscular relaxants, local anesthetics, adjunct medications, vasoactive medications used in anesthesia practice (knowledge to application)</td>
<td>1-2 months</td>
<td>Annual in-training examination</td>
</tr>
<tr>
<td>Discusses fluid and blood therapy (knowledge to application)</td>
<td>1-2 months</td>
<td>Informal oral questioning</td>
</tr>
<tr>
<td>Describes monitoring principles in anesthesia and function of standard monitors, arterial line monitoring, pulmonary artery catheter monitoring, arterial wave-form cardiac output monitoring (knowledge to application)</td>
<td>1-6 months</td>
<td>Simulation</td>
</tr>
<tr>
<td>Discusses physiology and interactions of cardiovascular, central nervous, respiratory, renal, hepatic, endocrine systems and anesthesia, acid-base and blood gas analysis (knowledge to application)</td>
<td>6 months</td>
<td>Oral case presentations</td>
</tr>
</tbody>
</table>
## Goals and Objectives

- Discusses principles of circulatory and respiratory resuscitation (knowledge to application)  
  - 1-2 months
- Discusses regional and neuraxial anesthetic techniques, contraindications and medications (knowledge to application)  
  - 12 months
- Reads Introduction to Anesthesia (Baby Miller) (knowledge to application)  
  - 2-3 months
- Reads appropriate chapters in Miller’s Anesthesia (Big Miller) related to pathology of the current patient (knowledge to application)  
  - 0-12 months
- Reads and discuss journal articles related to patient care and/or journal club articles (knowledge to application)  
  - 12 months
- Attends 75% of lectures (knowledge to application)  
  - 0-12 months
- Reads the latest edition of Anesthesia textbook edited by Miller (knowledge to application)  
  - 12 months

## Practice Based Learning and Improvement

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<td>Identify own learning deficits, develop a learning plan and carry it out (receiving to valuing)</td>
<td>12 months</td>
<td>Written essay describing an analysis of patient management (areas of deficiencies, room for improvement)</td>
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<td>Respond appropriately to constructive feedback (receiving to valuing)</td>
<td>12 months</td>
<td>Immediate formative feedback from attending</td>
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<tr>
<td>Demonstrate ability to effectively search for literature (perception to complex overt response)</td>
<td>12 months</td>
<td>QI project in a group</td>
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<tr>
<td>Read, analyze and interpret the scientific literature</td>
<td>12 months</td>
<td>Direct observation</td>
</tr>
<tr>
<td>Analyze own practice and determine ways in which you can improve your comprehensive anesthetic plan (analysis, valuing)</td>
<td>12 months</td>
<td>Journal club presentations and case presentations</td>
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## Interpersonal and Communication Skills

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<tr>
<td>Use of effective listening, questioning, and explanatory skills in gathering information from patients and in providing information to</td>
<td>6 months</td>
<td>Direct observation with patient</td>
</tr>
<tr>
<td></td>
<td>6 months</td>
<td>Direct observation in simulation</td>
</tr>
</tbody>
</table>
Goals and Objectives

- Patients, families, the public, and other health care providers (receiving to valuing)
  - Effectively and efficiently communicates pertinent patient information to a secondary care provider (resident to PACU nurse) (receiving to valuing)
  - Skill in working as a member of a patient care team including other physicians, nurses, other health care professionals, social workers, and volunteers (receiving to valuing)
  - Participate in the guidance of patients in life adjustment to the chronic illness considering the effect of such illness on the patient, family members and on the structure of the family (receiving to valuing)
  - Maintain comprehensive, timely, and legible medical records (receiving to valuing)

- 360 global rating
- Learner classroom presentation

Professionalism

**Developmental Milestone Objective**

- Awareness and management of his/her own values and attitudes, which might interfere with appropriate patient care (receiving to valuing)
- Responsiveness to and management of issues that relate to socio-cultural aspects of family life, and social adjustment related to ethnicity, religion, culture, gender or sexual preference (receiving to valuing)
- Sensitivity and responsiveness of the problems of patients at all stages of life including elderly patients (receiving to valuing)
- Consistent compassion, honesty, integrity and respect for others in all professional activities (receiving to valuing)

**Training Level**

- 12 months

**Assessment**

- Direct observation
- 360

System Based Practice

**Developmental Milestone Objective**

- Work in inter-professional teams to increase patient safety and

**Training Level**

- 12 months

**Assessment**

- Direct observation
Department of Anesthesiology

Goals and Objectives

- Quality of care (perception to complex overt response)
  - Coordinate patient care in multiple settings including inpatient, outpatient surgical suites or outside the surgical suites (perception to complex overt response)
  - Discuss system-based problems as they pertain to patient care at M&M conferences (knowledge to analysis)

Scholarly/Research Activities

CA-1 Patient Case Reflection Essay (Due 12th month of CA-1 year)

Reading Requirements

The resident should read the following chapters while taking the rotation:

**Text:**
- Basics of Anesthesia, Miller & Stoelting
- Miller's Anesthesia, Miller

**Chapters:**
- All
- Corresponding lecture chapters at minimum


Also suggested – not available in library
4. HANDBOOK of CLINICAL ANESTHESIA PROCEDURES OF THE MASSACHUSETTS GENERAL HOSPITAL, 8th edition, W Levine, Lippincott Williams&Wilkins, 2010

Assessments

The resident will receive a summative written evaluation form at the end of the rotation from the Site Director, as well as verbal feedback informally throughout the rotation. The case-logs of the resident will also be evaluated periodically by the clinical competency committee for the number and type of procedures and anesthetic techniques entered to ensure they are obtaining adequate experience.