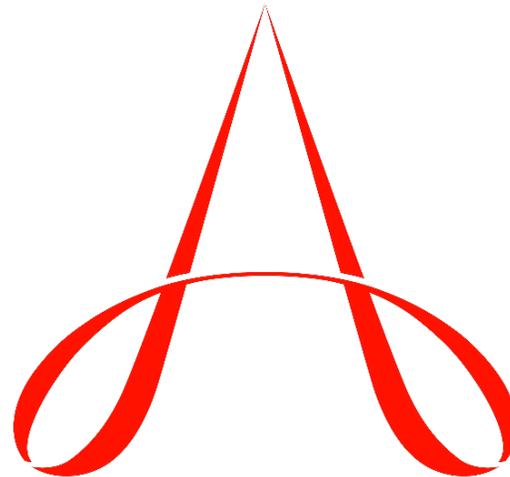




Pediatric Radiology Milestones

The Accreditation Council for Graduate Medical Education



A C G M E

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Second Revision: July 2021
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Pediatric Radiology Milestones

The Milestones are designed only for use in evaluation of fellows in the context of their participation in ACGME-accredited residency or fellowship programs. The Milestones provide a framework for the assessment of the development of the fellow in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Pediatric Radiology Milestones

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American Board of Radiology

ACGME Review Committee for Radiology

Understanding Milestone Levels and Reporting

This document presents the Milestones, which programs use in a semi-annual review of fellow performance, and then report to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME Competencies organized in a developmental framework. The narrative descriptions are targets for fellow performance throughout their educational program.

Milestones are arranged into levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert fellow in the specialty or subspecialty. For each reporting period, the Clinical Competency Committee will review the completed evaluations to select the milestone levels that best describe each learner's current performance, abilities, and attributes for each subcompetency.

These levels *do not* correspond with post-graduate year of education. Depending on previous experience, a junior fellow may achieve higher levels early in his/her educational program just as a senior fellow may be at a lower level later in his/her educational program. There is no predetermined timing for a fellow to attain any particular level. Fellows may also regress in achievement of their milestones. This may happen for many reasons, such as over scoring in a previous review, a disjointed experience in a particular procedure, or a significant act by the fellow.

Selection of a level implies the fellow substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page vi).

Additional Notes

Level 4 is designed as a graduation *goal* but *does not* represent a graduation *requirement*. Making decisions about readiness for graduation and unsupervised practice is the purview of the program director. Furthermore, Milestones 2.0 include revisions and changes that preclude using Milestones as a sole assessment in high-stakes decisions (i.e., determination of eligibility for certification or credentialing). Level 5 is designed to represent an expert fellow whose achievements in a subcompetency are greater than the expectation. Milestones are primarily designed for formative, developmental purposes to support continuous quality improvement for individual learners, education programs, and the specialty. The ACGME and its partners will continue to evaluate and perform research on the Milestones to assess their impact and value.

Examples are provided for some milestones within this document. Please note: the examples are not the required element or outcome; they are provided as a way to share the intent of the element.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to ACGME supervision guidelines as described in the Program Requirements, as well as to institutional and program policies. For example, a fellow who performs a procedure independently must, at a minimum, be supervised through oversight.

A Supplemental Guide is also available to provide the intent of each subcompetency, examples for each level, assessment methods or tools, and other available resources. The Supplemental Guide, like examples contained within the Milestones, is designed only to assist the program director and Clinical Competency Committee, and is not meant to demonstrate any required element or outcome.

Additional resources are available in the [Milestones](#) section of the ACGME website. Follow the links under “What We Do” at www.acgme.org.

The diagram below presents an example set of milestones for one sub-competency in the same format as the ACGME Report Worksheet. For each reporting period, a fellow's performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that fellow's performance in relation to those milestones.

Patient Care 2: Competence in Procedures				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs procedures with direct supervision	Competently performs basic pediatric procedures with indirect supervision	Competently performs basic and advanced pediatric procedures with direct supervision	Competently performs basic and advanced pediatric procedures with indirect supervision	Assists in the development of departmental procedure methodologies
Discusses potential procedural complications	Recognizes complications of procedures and enlists help	Manages complications of procedures with supervision	Anticipates and independently manages complications of procedures	Assists in the development of departmental rules of management for complications of procedures
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="float: right;"> Not Yet Completed Level 1 <input type="checkbox"/> Not Yet Assessable <input type="checkbox"/> </div>				

Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.

Selecting a response box on the line in between levels indicates that milestones in lower levels have been substantially demonstrated as well as **some** milestones in the higher level(s).

Patient Care 1: Consultant				
Level 1	Level 2	Level 3	Level 4	Level 5
Uses electronic health records (EHRs) to obtain relevant clinical information; contacts referring physician when reason for exam is unclear	With assistance, delineates the clinical question, obtains appropriate clinical information, uses evidence-based imaging guidelines, and recommends next steps for emergent and routine consultations	With assistance, delineates the clinical question, obtains appropriate clinical information, uses evidence-based imaging guidelines, and recommends next steps for complex consultations	Manages consultations independently, taking into consideration cost effectiveness and risk-benefit analysis	Provides comprehensive consultations at the expert level
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not Yet Completed Level 1 <input type="checkbox"/> Not Yet Assessable <input type="checkbox"/>

Patient Care 2: Competence in Procedures				
Level 1	Level 2	Level 3	Level 4	Level 5
Performs procedures with direct supervision	Competently performs basic pediatric procedures with indirect supervision	Competently performs basic and advanced pediatric procedures with direct supervision	Competently performs basic and advanced pediatric procedures with indirect supervision	Assists in the development of departmental procedure methodologies
Discusses potential procedural complications	Recognizes complications of procedures and enlists help	Manages complications of procedures with supervision	Anticipates and independently manages complications of procedures	Assists in the development of departmental rules of management for complications of procedures
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;"> Not Yet Completed Level 1 <input type="checkbox"/> Not Yet Assessable <input type="checkbox"/> </div>				

Medical Knowledge 1: Protocol Selection and Optimization of Images				
Level 1	Level 2	Level 3	Level 4	Level 5
With supervision, selects appropriate protocol and contrast agent/dose for commonly performed pediatric imaging exams	With supervision, selects appropriate protocol and contrast agent/dose for less commonly performed pediatric imaging exams	With supervision, selects appropriate protocol and contrast agent/dose for complex pediatric imaging exams	Adjusts departmental protocols for optimal imaging of an individual patient's needs	Modifies protocols and assists in developing new protocols and/or techniques for pediatric imaging
Recognizes suboptimal imaging	Describes basic techniques to optimize image quality	With supervision, applies techniques to optimize image quality	Independently applies techniques to optimize image quality	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;"> Not Yet Completed Level 1 <input type="checkbox"/> Not Yet Assessable <input type="checkbox"/> </div>				

Medical Knowledge 2: Interpretation				
Level 1	Level 2	Level 3	Level 4	Level 5
Makes primary observations and formulates differential diagnoses, including consideration of normal pediatric imaging anatomy	Makes secondary observations, understands normal developmental variants, and formulates a more specific differential diagnosis	Provides accurate, focused interpretations and, with supervision, prioritizes differential diagnoses	Independently differentiates pediatric normal from abnormal findings and suggests a single diagnosis when appropriate	Demonstrates interpretative and management recommendation skills at a level expected of a specialist pediatric radiologist
With guidance, recognizes key critical reportable findings (e.g., pneumothorax, pneumoperitoneum)	Identifies secondary and critical imaging findings and demonstrates knowledge of clinical management options	With supervision, recommends management options to clinical team	Independently recommends management options to clinical team	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;"> Not Yet Completed Level 1 <input type="checkbox"/> Not Yet Assessable <input type="checkbox"/> </div>				

Medical Knowledge 3: Knowledge of Basic and Clinical Science				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of imaging anatomy of an infant, child, and adolescent	Applies knowledge of anatomy to make imaging diagnoses of common pediatric conditions	Applies knowledge of anatomy to make imaging diagnoses of less common pediatric conditions	Proficiently integrates knowledge of anatomic and molecular imaging with pathophysiology to formulate a diagnosis	Proficiently integrates knowledge of anatomic and molecular imaging with pathophysiology to formulate a diagnosis at the expected level of a specialized pediatric radiologist
Demonstrates knowledge of pathophysiology of common pediatric disease processes	Applies knowledge of pathophysiology to make imaging diagnoses of common pediatric conditions	Applies knowledge of pathophysiology to make imaging diagnoses of less common pediatric conditions		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				
				Not Yet Completed Level 1 <input type="checkbox"/>
				Not Yet Assessable <input type="checkbox"/>

Systems-Based Practice 1: Pediatric Imaging Patient Safety				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common pediatric patient safety events	Identifies system factors that lead to pediatric patient safety events	Participates in analysis of pediatric patient safety events (simulated or actual)	Conducts analysis of pediatric patient safety events and offers error prevention strategies (simulated or actual)	Actively engages teams and processes to modify systems to prevent pediatric patient safety events
Demonstrates knowledge of how to report pediatric patient safety events	Reports pediatric patient safety events through institutional reporting systems (simulated or actual)	Participates in disclosure of pediatric patient safety events to patients and families (simulated or actual)	Discloses pediatric patient safety events to patients and families (simulated or actual)	Role models or mentors others in the disclosure of pediatric patient safety events
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Systems-Based Practice 2: Quality Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of basic quality improvement methodologies and metrics	Describes local quality improvement initiatives	Participates in local quality improvement initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	Creates, implements, and assesses quality improvement initiatives at the institutional or community level
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Systems-Based Practice 3: System Navigation for Pediatric Patient- and Family-Centered Care				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of care coordination in pediatric radiology imaging/procedures	Coordinates care of patients in routine pediatric radiology imaging/procedures effectively using the roles of interprofessional teams	Coordinates care of patients in complex pediatric radiology imaging/procedures effectively using the roles of interprofessional teams	Role models effective coordination of pediatric patient- and family-centered care among different disciplines and specialties	Analyzes the process of care coordination and leads in the design and implementation of improvements
Identifies key elements for safe and effective transitions of care and hand-offs	Performs safe and effective transitions of care/hand-offs in routine clinical situations	Performs safe and effective transitions of care/hand-offs in complex clinical situations	Role models safe and effective transitions of care/hand-offs	Improves quality of transitions of care to optimize pediatric patient outcomes
Demonstrates knowledge of population and community health needs and disparities	Identifies specific population and community health needs and inequities for the local population	Identifies local resources available to meet the needs of a patient population and community	Participates in adapting the practice to provide for the needs of specific populations (actual or simulated)	Leads innovations and advocates for populations and communities with health care inequities
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Systems-Based Practice 4: Physician Role in Health Care Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Identifies key components of the complex health care system (e.g., hospital, finance, personnel, technology)</p> <p>Describes the mechanisms for reimbursement, including types of payors</p>	<p>Describes how components of a complex health care system are interrelated, and how this impacts patient care</p> <p>States relative cost of common procedures</p>	<p>Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency)</p> <p>Describes the technical and professional components of imaging costs</p>	<p>Manages various components of the complex health care system to provide efficient and effective pediatric patient care and transition of care</p> <p>Describes the pediatric radiology revenue cycle and measurements of productivity (e.g., relative value units)</p>	<p>Advocates for or leads systems change that enhances high-value, efficient, and effective pediatric patient care and transition of care</p> <p>Participates in health policy advocacy activities</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p> <p style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></p>				

Systems-Based Practice 5: Contrast Agent Safety				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of contrast reactions	Recognizes contrast reactions (simulated or actual)	With supervision, manages contrast reactions (simulated or actual)	Independently manages contrast reactions (simulated or actual)	Leads educational experience in simulation laboratory for contrast reaction
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Systems-Based Practice 6: Radiation Safety				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of the mechanisms of radiation injury and the ALARA (“as low as reasonably achievable”) concept	Accesses resources to determine exam-specific average radiation dose information	Communicates the relative risk of exam-specific radiation exposure to pediatric patients, patients’ families, and practitioners	Applies principles of ALARA in daily practice	Creates, implements, and assesses radiation safety initiatives at the institutional level
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Systems-Based Practice 7: Magnetic Resonance (MR) Safety				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of the risks of magnetic resonance imaging (MRI), including safety zones and pre-MR screening	Accesses resources to determine the safety of implanted devices and retained foreign bodies	Communicates MR safety, including implants and retained foreign bodies, to pediatric patients, patients' families, and practitioners	Applies principles of MR safety to daily practice	Creates, implements, and assesses MR safety initiatives at the institutional level
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates how to access and use available evidence to determine the best imaging examination for a routine patient/diagnosis	Articulates clinical questions and elicits patient's and patient's family's preferences and concerns to guide evidence-based imaging	Locates and applies the best available evidence, integrated with patient's and patient's family's preferences and concerns, to the care of complex patients	Critically appraises conflicting evidence to guide care, tailored to the individual patient	Coaches others to critically appraise and apply evidence for complex patients, and/or participates in the development of guidelines
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Professional Growth				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Accepts responsibility for professional development by establishing goals</p> <p>Identifies factors that contribute to gap(s) between expectations and actual performance</p> <p>Actively seeks opportunities to improve performance</p>	<p>Is receptive to performance data and feedback to adjust goals</p> <p>Analyzes and reflects on factors that contribute to gap(s) between expectations and actual performance</p> <p>With prompting, designs and implements a learning plan</p>	<p>Episodically seeks performance data and feedback, with humility and adaptability</p> <p>Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance</p> <p>Independently designs and implements a learning plan</p>	<p>Consistently seeks performance data and feedback with humility and adaptability</p> <p>Analyzes effectiveness of behavioral changes where appropriate, and considers alternatives in narrowing the gap(s) between expectations and actual performance</p> <p>Uses performance data to measure the effectiveness of the learning plan and improves it when necessary</p>	<p>Coaches other learners to consistently seek performance data and feedback</p> <p>Coaches others on reflective practice</p> <p>Facilitates the design and implements learning plans for others</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p> <p style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></p>				

Professionalism 1: Professional Behavior and Ethical Principles				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates knowledge of expectations for professional behavior and describes how to appropriately report professional lapses</p> <p>Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, and stewardship of limited resources</p>	<p>Demonstrates insight into professional behavior in routine situations and takes responsibility for one's own professionalism lapses</p> <p>Analyzes straightforward situations using ethical principles</p>	<p>Demonstrates professional behavior in complex or stressful situations</p> <p>Recognizes the need to seek help in managing and resolving complex ethical situations</p>	<p>Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in oneself and others</p> <p>Recognizes and uses appropriate resources for managing and resolving ethical dilemmas as needed (e.g., ethics consultations, literature review, risk management/legal consultation)</p>	<p>Coaches others when their behavior fails to meet professional expectations</p> <p>Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p> <p style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></p>				

Professionalism 2: Accountability/Conscientiousness				
Level 1	Level 2	Level 3	Level 4	Level 5
Responds promptly to requests or reminders to complete tasks and responsibilities	Performs tasks and responsibilities in a timely manner to ensure the needs of patients, families, teams, and systems are met in routine situations	Performs tasks and responsibilities in a timely manner to ensure the needs of patients, families, teams, and systems are met in complex or stressful situations	Recognizes and raises awareness of situations that may impact others' ability to complete tasks and responsibilities in a timely manner	Takes ownership of system outcomes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Professionalism 3: Self-Awareness and Help-Seeking				
Level 1	Level 2	Level 3	Level 4	Level 5
With assistance, recognizes status of personal and professional well-being, and is aware of available resources With assistance, recognizes limits in the knowledge/skills of self or team	Independently recognizes status of personal and professional well-being using available resources when appropriate Independently recognizes limits in the knowledge/skills of oneself or the team and demonstrates appropriate help-seeking behaviors	With assistance, proposes a plan to optimize personal and professional well-being With assistance, proposes a plan to remediate or improve limits in the knowledge/skills of oneself or the team	Independently develops a plan to optimize personal and professional well-being Independently develops a plan to remediate or improve limits in the knowledge/skills of oneself or the team	Coaches others when emotional responses or limitations in knowledge/skills do not meet professional expectations
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;"> Not Yet Completed Level 1 <input type="checkbox"/> </div>				

This subcompetency is not intended to evaluate a fellow's well-being. Rather, the intent is to ensure that each fellow has the fundamental knowledge of factors that affect well-being, the mechanisms by which those factors affect well-being, and available resources and tools to improve well-being.

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Accurately communicates one's own role within the health care system</p> <p>Identifies the need to adjust communication strategies based on assessment of the patient's/patient's family's expectations and understanding of their health status and treatment options</p>	<p>Identifies barriers to effective communication (e.g., language, health literacy, cultural differences) for families and children of all ages</p> <p>Organizes and initiates communication with the patient/patient's family by clarifying expectations and verifying understanding of the clinical situation; adapts to changing needs of children as they age</p>	<p>Identifies biases that hinder effective communication</p> <p>With guidance, sensitively and compassionately delivers medical information, elicits patient goals and preferences, and acknowledges uncertainty and conflict</p>	<p>Actively minimizes communication barriers</p> <p>Independently uses shared decision making to align patient goals, and preferences with treatment options to make a personalized care plan</p>	<p>Coaches other learners to minimize communication barriers</p> <p>Coaches other learners in shared decision making</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p> <p style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></p>				

Interpersonal and Communication Skills 2: Interprofessional and Team Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
Respectfully receives a consultation request	Clearly and concisely responds to a consultation request	Checks understanding of recommendations when providing consultation	Coordinates recommendations from different members of the health care team to optimize patient care	Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed
Demonstrates knowledge of the institutional and national communication guidelines	Communicates emergent findings according to institutional or national guidelines	Communicates non-emergent findings where failure to act may adversely affect patient outcome	Communicates findings and management options (as appropriate) that are tailored to the referring provider	Coaches other learners in tailored communications to referring providers
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				

Interpersonal and Communication Skills 3: Communication within Health Care Systems				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of institutional communications policies	Communicates appropriately as required by institutional policy	Communicates systems concerns in a respectful manner	Communicates clear and constructive suggestions to improve systems	Facilitates dialogue regarding systems issues among larger community stakeholders (institution, health care system, field)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="text-align: right;">Not Yet Completed Level 1 <input type="checkbox"/></div>				