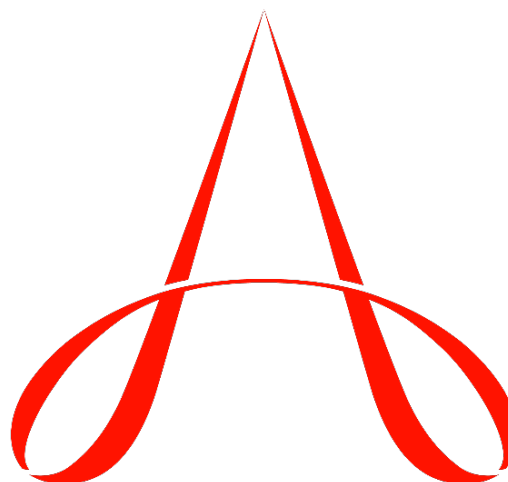




Chemical Pathology Milestones

The Accreditation Council for Graduate Medical Education



ACGME

Second Revision: November 2020

First Revision: May 2014

Chemical Pathology 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.

Chemical Pathology Milestones Work Group

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American Board of Pathology
Review Committee for Pathology

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 resident/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 resident 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.

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 subcompetency in the same format as the ACGME Report Worksheet. For each reporting period, a fellow's performance on the milestones for each subcompetency will be indicated by selecting the level of milestones that best describes that fellow's performance in relation to those milestones.

Practice-Based Learning and Improvement 2: Commitment to Reflective Practice and Personal Growth				
Level 1	Level 2	Level 3	Level 4	Level 5
Establishes personal and professional goals, identifying gap(s) between goals and current performance	Demonstrates receptiveness to feedback, analyzing and reflecting on factors contributing to gap(s) between goals and current performance Designs and implements a learning plan, with prompting	Seeks feedback episodically, and institutes behavioral change(s) when necessary Independently creates and implements an individualized learning plan	Seeks feedback consistently, and sustains behavioral change as necessary Uses performance data to measure the effectiveness of the learning plan and when necessary, improves it	Role models consistently seeking performance data with adaptability and humility, and coaches others on reflective practice Facilitates the design and implementing learning plans for others
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <div style="float: right; text-align: right;"> Not Yet Completed Level 1 <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: Clinical Consultation				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the role of the consultant in chemical pathology	Identifies relevant information from the electronic health record (EHR) and other sources needed for consultation of routine clinical scenarios	Prepares consultative reports, recommendations, and action plans for routine clinical scenarios	Provides consultative reports, recommendations, and action plans for complex clinical scenarios	Teaches others how to approach consultation for simple and complex clinical scenarios
<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 Rotated	<input type="checkbox"/>

Patient Care 2: Test Interpretation				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes differences in methodologies and performance characteristics of chemistry tests	Recognizes aberrant and/or discrepant results of chemistry tests	Interprets routine chemistry tests with understanding of patient context and with regards to test methodology	Demonstrates expertise of test interpretation for the diagnosis and/or monitoring of complex clinical scenarios	Teaches others a strategy to approach the interpretation of chemistry tests for complex clinical scenarios
<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 Rotated	<input type="checkbox"/>

Patient Care 3: Test Development and Validation				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the need for a new test or modification of an existing test	Selects the methodology for a new test or modification of an existing test	Identifies requirements for test verification of a Food and Drug Administration (FDA)-approved test	Identifies requirements for test validation of a laboratory developed test	Creates a new laboratory developed test that can be accredited
Recognizes outside resources for referred testing	Evaluates the need for referred testing	Evaluates outside resources for accreditation and Clinical Laboratory Improvement Amendments (CLIA) licensure	Demonstrates expertise in the selection of referred tests	Optimizes a test menu based on trends of referred testing
<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 Rotated	<input type="checkbox"/>

Patient Care 4: Laboratory-Related User Interface				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the laboratory test order user interface	Describes best practices in test ordering	Prepares a best practice alert or guidance for test ordering	Implements a best practice alert or hard stop for test ordering	Optimizes the pre-analytic laboratory user interface and structure
Identifies the laboratory test reporting structure	Describes clinical laboratory rationale for test reporting structure	Predicts gaps, problems, and impediments for optimized test report display in the laboratory user interface	Troubleshoots the test report format and structure in the laboratory user interface	Optimizes the post-analytic laboratory user interface and structure
<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 Rotated	<input type="checkbox"/>

Medical Knowledge 1: Test Results in Normal and Abnormal Physiology				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of normal physiology and biochemistry	Demonstrates knowledge of how tests evaluate normal biological processes	Demonstrates knowledge of how pathophysiology alters test results	Integrates test findings and other clinical information to identify pathophysiology	Demonstrates knowledge of how test findings are affected by the interaction of multiple 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 Rotated	<input type="checkbox"/>

Medical Knowledge 2: Clinical Reasoning				
Level 1	Level 2	Level 3	Level 4	Level 5
Use baseline level of medical knowledge to inform decision-making process	Discriminates relevance of information	Independently synthesizes information to inform clinical decision making for routine clinical scenarios	Independently synthesizes information to inform clinical decision making for complex clinical scenarios	Creates a strategy to approach clinical reasoning for complex and ambiguous cases
<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 Rotated <input type="checkbox"/> </div>				

Systems-Based Practice 1: Patient Safety and Quality Improvement (QI)				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common patient safety events	Identifies system factors that lead to patient safety events	Participates in analysis of patient safety events (simulated or actual)	Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)	Actively engages teams and processes to modify systems to prevent patient safety events
Demonstrates knowledge of how to report patient safety events	Reports patient safety events through institutional reporting systems (simulated or actual)	Participates in disclosure of patient safety events to clinicians and/or patients and families, as appropriate (simulated or actual)	Discloses patient safety events to clinicians and/or patients and families, as appropriate (simulated or actual)	Role models or mentors others in the disclosure of patient safety events
Demonstrates knowledge of basic QI methodologies and metrics	Describes departmental and institutional QI initiatives	Participates in departmental and institutional QI initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a QI project	Creates, implements, and assesses QI 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 2: Systems Navigation for Patient-Centered Care				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of case coordination	Coordinates care of patients/specimens in routine cases effectively using interprofessional teams	Coordinates care of patients/specimens in complex cases effectively using interprofessional teams	Models effective coordination of patient-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 situations	Performs safe and effective transitions of care/hand-offs in complex situations	Models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems	Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes
Demonstrates knowledge of population and community health needs and disparities	Identifies pathology's role in population and community health needs and inequities for the local population	Identifies opportunities for pathology to participate in community and population health	Recommends and/or participates in changing and adapting practice to provide for the needs of communities and populations	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:				
Not Yet Completed Level 1 <input type="checkbox"/>				

Systems-Based Practice 3: Physician Role in Health Care System				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, finance, personnel, technology)</p> <p>Describes basic health payment systems (e.g., government, private, public, uninsured care) and practice models</p>	<p>Describes how components of a complex health care system are interrelated, and how this impacts patient care</p> <p>Documents testing detail and explains the impact of documentation on billing and reimbursement</p>	<p>Discusses how individual practice affects the broader system (e.g., test use, turnaround time)</p> <p>Engages with clinicians and/or patients in shared decision making, such as use of preauthorization for complex testing</p>	<p>Manages various components of the complex health care system to provide efficient and effective patient care and transition of care</p> <p>Practices and advocates for cost effective patient care with consideration of the limitations of each patient's payment model</p>	<p>Advocates for or leads systems change that enhances high-value, efficient, and effective 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 4: Accreditation, Compliance, and Quality				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates knowledge that laboratories must be accredited</p> <p>Discusses the need for quality control and proficiency testing</p>	<p>Demonstrates knowledge of the components of laboratory accreditation and regulatory compliance (Clinical Laboratory Improvement Amendments and others), either through training or experience</p> <p>Interprets quality data and charts and trends, including proficiency testing results, with supervision</p>	<p>Identifies the differences between accreditation and regulatory compliance; discusses the process for achieving accreditation and maintaining regulatory compliance</p> <p>Demonstrates knowledge of the components of a laboratory quality management plan</p> <p>Discusses implications of proficiency testing failures</p>	<p>Participates in an internal or external laboratory inspection</p> <p>Reviews the quality management plan to identify areas for improvement</p> <p>Analyzes proficiency testing failures and recommends a course of action, with oversight</p>	<p>Serves as a resource for accreditation at the regional or national level</p> <p>Creates and follows a comprehensive quality management plan</p> <p>Independently formulates a response for proficiency testing failures</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: Utilization				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies general chemical pathology work practices and workflow	Explains rationale for optimizing utilization	Identifies opportunities to optimize utilization of pathology resources	Initiates efforts to optimize utilization	Completes a utilization review and implements change
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not Yet Rotated <input type="checkbox"/>

Practice-Based Learning and Improvement 1: Evidence-Based Practice and Scholarship				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates how to access and select applicable evidence</p> <p>Is aware of the need for patient privacy, autonomy, and consent as applied to clinical research</p>	<p>Identifies and applies the best available evidence to guide diagnostic work-up of simple cases</p> <p>Develops knowledge of the basic principles of research (demographics, Institutional Review Board, human subjects), including how research is evaluated, explained to patients, and applied to patient care</p>	<p>Identifies and applies the best available evidence to guide diagnostic work-up of complex cases</p> <p>Applies knowledge of the basic principles of research such as informed consent and research protocols to clinical practice, with supervision</p>	<p>Critically appraises and applies evidence to guide care, even in the face of conflicting data</p> <p>Proactively and consistently applies knowledge of the basic principles of research such as informed consent and research protocols to clinical practice</p>	<p>Teaches others to critically appraise and apply evidence for complex cases; and/or participates in the development of guidelines</p> <p>Suggests improvements to research regulations and/or substantially contributes to the primary literature through basic, translational, or clinical research</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>				

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth				
Level 1	Level 2	Level 3	Level 4	Level 5
Accepts responsibility for personal and professional development by establishing goals	Demonstrates openness to receiving performance data and feedback in order to inform goals	Seeks performance data and feedback with humility	Actively and consistently seeks performance data and feedback with humility	Models seeking performance data and accepting feedback with humility
Identifies the gap(s) between expectations and actual performance	Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance	Institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance	Critically evaluates the effectiveness of behavioral changes in narrowing the gap(s) between expectations and actual performance	Coaches others in reflective practice
Actively seeks opportunities to improve	Designs and implements a learning plan, with assistance	Independently creates and implements a learning plan	Uses performance data to measure the effectiveness of the learning plan and improves it when necessary	Facilitates the design and implementing learning plans for others
<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 1: Professional Behavior and Ethical Principles				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics</p> <p>Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers; identifies and describes potential triggers for professionalism lapses</p>	<p>Analyzes straightforward situations using ethical principles</p> <p>Demonstrates insight into professional behavior in routine situations; takes responsibility for own professionalism lapses</p>	<p>Recognizes the need and uses relevant resources to seek help in managing and resolving complex ethical situations</p> <p>Demonstrates professional behavior in complex or stressful situations</p>	<p>Independently resolves and manages complex ethical situations</p> <p>Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in self and others</p>	<p>Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution</p> <p>Coaches others when their behavior fails to meet professional expectations</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 and Conscientiousness				
Level 1	Level 2	Level 3	Level 4	Level 5
Responds promptly to instructions, requests, or reminders to complete tasks and responsibilities	Takes ownership and performs tasks and responsibilities in a timely manner with attention to detail	Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner and describes the impact on team	Anticipates and intervenes in situations that may impact others' ability to complete tasks and responsibilities in a timely manner	Takes ownership of system outcomes Designs new strategies to ensure that the needs of patients, teams, and systems are met
<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
Recognizes limitations in the knowledge/skills/ behaviors of self or team, with assistance	Independently recognizes limitations in the knowledge/skills/ behaviors of self or team and seeks help when needed	Proposes and implements a plan to remediate or improve the knowledge/ skills/behaviors of self or team, with assistance	Independently develops and implements a plan to remediate or improve the knowledge/skills/ behaviors of self or team	Serves as a resource or consultant for developing a plan to remediate or improve the knowledge/ skills/behaviors
Recognizes status of personal and professional well-being, with assistance	Independently recognizes status of personal and professional well-being and seeks help when needed	Proposes and implements a plan to optimize personal and professional well-being, with assistance	Independently develops and implements a plan to optimize personal and professional well-being	Coaches others when 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>				

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Uses language and nonverbal behavior to demonstrate respect and establish rapport</p> <p>Identifies common barriers to effective communication (e.g., language, disability) while accurately communicating own role within the health care system</p>	<p>Establishes a relationship in straightforward encounters using active listening and clear language</p> <p>Identifies complex barriers to effective communication (e.g., health literacy, cultural)</p>	<p>Sensitively and compassionately delivers medical information, with supervision</p> <p>When prompted, reflects on personal biases while attempting to minimize communication barriers</p>	<p>Independently, sensitively, and compassionately delivers medical information and acknowledges uncertainty and conflict</p> <p>Independently recognizes personal biases while attempting to proactively minimize communication barriers</p>	<p>Mentors others in the sensitive and compassionate delivery of medical information</p> <p>Models self-awareness while teaching a contextual approach to minimize communication barriers</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not Yet Completed Level 1 <input type="checkbox"/>

Interpersonal and Communication Skills 2: Interprofessional and Team Communication				
Level 1	Level 2	Level 3	Level 4	Level 5
Uses language that values all members of the health care team	Communicates information effectively with all health care team members	Uses active listening to adapt communication style to fit team needs	Coordinates recommendations from different members of the health care team to optimize patient care	Models flexible communication strategies that value input from all health care team members, resolving conflict when needed
Describes the use of constructive feedback	Solicits feedback on performance as a member of the health care team	Integrates feedback from team members to improve communication	Communicates feedback and constructive criticism to superiors	Facilitates regular health care team-based feedback in complex situations
<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
<p>Safeguards patient personal health information by communicating through appropriate means as required by institutional policy (e.g., patient safety reports, cell phone/pager usage)</p> <p>Identifies institutional and departmental structure for communication of issues</p>	<p>Selects forms of communication based on context and urgency of the situation</p> <p>Respectfully communicates concerns about the system</p>	<p>Communicates while ensuring security of personal health information, with supervision</p> <p>Uses institutional structure to effectively communicate clear and constructive suggestions to improve the system</p>	<p>Independently communicates while ensuring security of personal health information</p> <p>Initiates conversations on difficult subjects with appropriate stakeholders to improve the system</p>	<p>Guides departmental or institutional communication around policies and procedures regarding the security of personal health information</p> <p>Facilitates dialogue regarding systems issues among larger community stakeholders (e.g., institution, health care system, field)</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>				