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Core Entrustable Professional Activities for Entering Residency

EPA 2 Toolkit: Prioritize a Differential Diagnosis Following a Clinical Encounter

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EPA 2 Toolkit: Prioritize a Differential Diagnosis Following a Clinical Encounter

Association of American Medical Colleges

Washington, D.C.

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Core Entrustable Professional Activities for Entering Residency

AAMC

Contents

User Guide 2

One-Page Schematics 3

Frequently Asked Questions 5

EPA 2 Schematic 7

Appendix 1: Core EPA Pilot Supervision and Coactivity Scales 8

Appendix 2: Resources Related to EPA 2 10

Appendix 3: Behaviors and Vignettes 12

Appendix 4: The Physician Competency Reference Set (PCRS) 13

References 17

- Publications From the Core EPA Pilot 17
- Other Related Publications 17

User Guide

This toolkit is for medical schools interested in implementing the Core Entrustable Professional Activities (EPAs) for Entering Residency. Written by the AAMC Core EPA Pilot Group, the toolkit expands on the EPA framework outlined in the *EPA Developer's Guide* (AAMC 2014). The Pilot Group identified progressive sequences of student behavior that medical educators may encounter as students engage in the medical school curriculum and became proficient in integrating their clinical skills. These sequences of behavior are articulated for each of the 13 EPAs in one-page schematics to provide a framework for understanding EPAs; additional resources follow.

This toolkit includes:

- One-page schematic of each EPA
- Core EPA Pilot supervision and coactivity scales
- List of resources associated with each EPA
- Reference to EPA bulleted behaviors and vignettes from the *Core EPA Guide*
- The Physician Competency Reference Set
- Opportunities for engagement with the Core EPA Pilot

One-Page Schematics

In 2014, the AAMC launched a pilot project with 10 institutions to address the feasibility of implementing 13 EPAs for entering residency in undergraduate medical education. To standardize our approach as a pilot and promote a shared mental model, the Core EPA Pilot Group developed one-page schematics for each of the 13 EPAs.

These schematics were developed to translate the rich and detailed content within *The Core Entrustable Professional Activities for Entering Residency Curriculum Developers' Guide* published in 2014 by the AAMC into a one-page, easy-to-use format (AAMC 2014). These one-page schematics of developmental progression to entrustment provide user-friendly descriptions of each EPA. We sought fidelity to the original ideas and concepts created by the expert drafting panel that developed the *Core EPA Guide*.

We envision the one-page schematics as a resource for:

- Development of curriculum and assessment tools
- Faculty development
- Student understanding
- Entrustment committees, portfolio advisors, and others tracking longitudinal student progress

Understanding the One-Page Schematic

Performance of an EPA requires integration of multiple competencies (Englander and Carraccio 2014). Each EPA schematic begins with its list of key functions and related competencies. The functions are followed by observable behaviors of increasing ability describing a medical student's development toward readiness for indirect supervision. The column following the functions lists those behaviors requiring immediate correction or remediation. The last column lists expected behaviors of an entrustable learner.

The members of the Curriculum and Assessment Team of the Core EPA Pilot Group led this initiative. Thirteen EPA groups, each comprising representatives from four to five institutions, were tasked with creating each EPA schematic. Development of the schematics involved an explicit, standardized process to reduce variation and ensure consistency with functions, competencies, and the behaviors explicit in the *Core EPA Guide*. Behaviors listed were carefully gathered from the *Core EPA Guide* and reorganized by function and competency and listed in a developmental progression. The Curriculum and Assessment Team promoted content validity by carrying out iterative reviews by telephone conference call with the members of the Core EPA Pilot Group assigned to each EPA.

EPA Curriculum and Assessment

Multiple methods of teaching and assessing EPAs throughout the curriculum will be required to make a summative entrustment decision about residency readiness. The schematics can help to systematically identify and map curricular elements required to prepare students to perform EPAs. Specific prerequisite curricula may be needed to develop knowledge, skills, and attitudes before the learner engages in practice of the EPA.

To implement EPAs, medical schools should identify where in the curriculum EPAs will be taught, practiced, and assessed. Among other modalities, simulation, reflection, and standardized and structured experiences will all provide data about student competence. However, central to the concept of entrustment is the global performance of EPAs in authentic clinical settings, where the EPA is taught and assessed holistically, not as the sum of its parts.

Workplace-Based Assessments: Supervision and Coactivity Scales

On a day-to-day basis, clinical supervisors make and communicate judgments about how much help (coactivity) or supervision a student or resident needs. “Will I let the student go in the room without me? How much will I let the student do versus observe? Because I wasn’t present to observe, how much do I need to double-check?” Scales for clinical supervisors to determine how much help or supervision a student needs for a specific activity have been proposed (Chen et al 2015; Rekman et al 2016). There is limited validity evidence for these scales, and no published data comparing them. Given our initial experience, the Core EPA Pilot Group has agreed on a trial using modified versions of these scales (Appendix 1).

Resources

The Pilot Group compiled a list of resources, including relevant Critical Synthesis Packages from MedEdPORTAL®, a review of current existing literature, teaching methods, and assessment tools related to each EPA (Appendix 2). This collection of products may help schools with implementation. For example, schools may find the teaching methods and assessment tools useful when considering multiple sources of data about student performance that may eventually contribute to a summative entrustment decision. The Pilot Group concluded that new teaching methods and assessment tools will be needed to complement these resources. This need is particularly relevant for workplace-based assessments where the synthetic performance of an EPA is linked to a level of supervision. We envision the one-page schematics as a resource for the development of new teaching and assessment methods.

Frequently Asked Questions

Why are EPAs important?

In many cases, medical school graduates are perceived by residency program directors as insufficiently prepared at the beginning of their residency training for indirect supervision in clinical skills and for exhibiting professional behaviors. The EPAs define a shared set of clinical activities that residents are expected to perform on day one of residency. This is an important opportunity for undergraduate medical education to develop a new construct toward preparedness and, as an end goal, improvements in patient safety. Ideally, students will perform the Core EPAs consistently in situations of varying complexity as they practice and receive actionable feedback, formulating learning goals for future demonstrations of competence.

What does "entrustment" mean in the context of the EPAs?

Entrustment is defined as trustworthiness in applying knowledge, skills, and attitudes in performance of an EPA. To be "trustworthy," students must consistently demonstrate attributes such as conscientiousness, knowledge of their own limits and help-seeking behavior (discernment), and truthfulness (Kennedy et al 2008). Throughout medical education, students should be assessed on trustworthiness—though this may occur implicitly or explicitly. The EPA framework makes this assessment explicit and transparent.

EPA entrustment is defined as a judgment by a supervisor or collection of supervisors signaling a student has met specific, defined expectations for needing limited supervision. The Core EPA Pilot Group recommends the formation of an entrustment committee to make evidence-based summative entrustment decisions about each student's readiness for residency (Brown et al 2017).

What is the relationship between competencies and EPAs?

The EPA framework reorganizes competencies into observable units of clinical work by function. Each function is a subunit of work required to perform an EPA. The functions and related competencies are the parts, and the EPA is the whole. The Toolkit's one-page schematics highlight an EPA's specific functions with underlying competencies into observable behaviors within a developmental progression toward entrustment.

Although tracking progression within individual functions can help learners develop appropriate skills, monitoring learner progress toward entrustability for that EPA requires synthesis: At some point the learner must apply each of the functions in execution of the EPA task. *To this end, we emphasize the importance of the holistic nature of the EPA and prioritize assessment for entrustment in these activities in workplace settings as a whole, not as the sum of their parts.*

Is the one-page schematic designed as a rubric for student assessment?

No, the one-page schematics are not intended to serve as assessment tools. They can serve as guides for development of instructional, feedback, and assessment tools for EPAs. We share them as a framework for understanding the developmental progression that graduating medical students should demonstrate as a reflection of their readiness for residency.

How can I or my institution become more involved?

Medical schools in the AAMC pilot, those interested in implementing EPAs, and those wondering about the faculty resources needed to teach and assess EPAs are already part of a dynamic learning community. Opportunities for engaging with others exist through the AAMC Core EPA listserve, conference presentations, collaborative projects, and in informal medical education networks. Your contributions help shape the work of the Core EPA Pilot project and are a source of new ideas, feedback, and suggestions for implementation. We invite you to continue your conversations with us by sharing the decisions you face within the unique culture of your institution.

- To subscribe to the Core EPAs listserve, send a blank email to subscribe-coreepas@lists.aamc.org. To post a comment to the listserve, simply send an email to coreepas@lists.aamc.org.
- Core EPA Pilot Website: https://www.aamc.org/initiatives/coreepas/
- Publications from the Core EPA Pilot Group: https://www.aamc.org/initiatives/coreepas/publicationsandpresentations/
- Core EPA Pilot Group email for queries and observations: coreepas@aamc.org

EPA 2: Prioritize a Differential Diagnosis Following a Clinical Encounter

An EPA: A unit of observable, measurable professional practice requiring integration of competencies

EPA 2

Prioritize a differential diagnosis

Underlying entrustability for all EPAs are trustworthy habits, including truthfulness, conscientiousness, and discernment.

This schematic depicts development of proficiency in the Core EPAs. It is *not* intended for use as an assessment instrument. Entrustment decisions should be made after EPAs have been observed in multiple settings with varying context, acuity, and complexity and with varying patient characteristics.

Key Functions with Related Competencies	Behaviors Requiring Corrective Response	→ Developing Behaviors → (Learner may be at different levels within a row.)		Expected Behaviors for an Entrustable Learner
Synthesize essential information from previous records, history, physical exam, and initial diagnostic evaluations to propose a scientifically supported differential diagnosis **PC2 KP3 KP4 KP2**	Cannot gather or synthesize data to inform an acceptable diagnosis Lacks basic medical knowledge to reason effectively	Approaches assessment from a rigid template Struggles to filter, prioritize, and make connections between sources of information Proposes a differential diagnosis that is too narrow, is too broad, or contains inaccuracies Demonstrates difficulty retrieving knowledge for effective reasoning	Gathers pertinent data based on initial diagnostic hypotheses Proposes a reasonable differential diagnosis but may neglect important diagnostic information Is beginning to organize knowledge by illness scripts (patterns) to generate and support a diagnosis	Gathers pertinent information from many sources in a hypothesis-driven fashion Filters, prioritizes, and makes connections between sources of information Proposes a relevant differential diagnosis that is neither too broad nor too narrow Organizes knowledge into illness scripts (patterns) that generate and support a diagnosis
Prioritize and continue to integrate information as it emerges to update differential diagnosis, while managing ambiguity **PC4 KP3 KP4 PPD8 PBL1**	Disregards emerging diagnostic information Becomes defensive and/or belligerent when questioned on differential diagnosis	Does not integrate emerging information to update the differential diagnosis Displays discomfort with ambiguity	Considers emerging information but does not completely integrate to update the differential diagnosis Acknowledges ambiguity and is open to questions and challenges	Seeks and integrates emerging information to update the differential diagnosis Encourages questions and challenges from patients and team
Engage and communicate with team members for endorsement and verification of the working diagnosis that will inform management plans **KP3 KP4 ICS2**	Ignores team's recommendations Develops and acts on a management plan before receiving team's endorsement Cannot explain or document clinical reasoning	Recommends a broad range of untailored diagnostic evaluations Depends on team for all management plans Does not completely explain and document reasoning	Recommends diagnostic evaluations tailored to the evolving differential diagnosis after having consulted with team Explains and documents clinical reasoning	Proposes diagnostic and management plans reflecting team's input Seeks assistance from team members Provides complete and succinct documentation explaining clinical reasoning

Appendix 1: Core EPA Pilot Supervision and Coactivity Scales

Scales for clinical supervisors to determine how much help (coactivity) or supervision they judge a student needs for a specific activity have been proposed—the Chen entrustment scale and the Ottawa scale (Chen et al 2015; Rekman et al 2016). There is limited validity evidence for these scales and no published data comparing them. We include these published tools here for your reference. The Core EPA Pilot Group has agreed on a trial using modified versions of these scales (described below). A description of how the pilot is working with these scales is available on the Core EPA website.

Modified Chen entrustment scale: If you were to supervise this student again in a similar situation, which of the following statements aligns with how you would assign the task?	Corresponding excerpt from **original Chen** entrustment scale (Chen et al 2015)
1b. "Watch me do this."	1b. Not allowed to practice EPA; allowed to observe
2a. "Let's do this together."	2a. Allowed to practice EPA only under proactive, full supervision as coactivity with supervisor
2b. "I'll watch you."	2b. Allowed to practice EPA only under proactive, full supervision with supervisor in room ready to step in as needed
3a. "You go ahead, and I'll double-check all of your findings."	3a. Allowed to practice EPA only under reactive/on-demand supervision with supervisor immediately available, all findings double-checked
3b. "You go ahead, and I'll double-check key findings."	3b. Allowed to practice EPA only under reactive/on demand supervision with supervisor immediately available, key findings double-checked

Modified Ottawa scale: In supervising this student, how much did you participate in the task?	**Original Ottawa scale** (Rekman et al 2016)
1. "I did it." Student required complete guidance or was unprepared; I had to do most of the work myself.	1. "I had to do." (i.e., requires complete hands-on guidance, did not do, or was not given the opportunity to do)
2. "I talked them through it." Student was able to perform some tasks but required repeated directions.	2. "I had to talk them through." (i.e., able to perform tasks but requires constant direction)
3. "I directed them from time to time." Student demonstrated some independence and only required intermittent prompting.	3. "I had to prompt them from time to time." (i.e., demonstrates some independence, but requires intermittent direction)
4. "I was available just in case." Student functioned fairly independently and only needed assistance with nuances or complex situations.	4. "I needed to be there in the room just in case." (i.e., independence but unaware of risks and still requires supervision for safe practice)
5. (No level 5: Students are ineligible for complete independence in our systems.)	5. "I did not need to be there." (i.e., complete independence, understands risks and performs safely, practice ready)

Appendix 2: Resources Related to EPA 2

Hypothesis-Driven Physical Examination (HDPE)

Uchida T, Heiman H. Critical synthesis package: hypothesis-driven physical examination (HDPE). MedEdPORTAL Publications. 2013;9:9435. doi.org/10.15766/mep_2374-8265.9435.

Mini-Clinical Evaluation Exercise

Perkowski L. Critical synthesis package: mini-clinical evaluation exercise (mCEX). MedEdPORTAL Publications. 2014;10:9793. doi.org/10.15766/mep_2374-8265.9793.

Script Concordance Testing (SCT)

Russell J. Critical synthesis package: script concordance testing (SCT). MedEdPORTAL Publications. 2013;9:9492. doi.org/10.15766/mep_2374-8265.9492.

Assessment of Professional Behaviors (APB)

Fornari A, Akbar S, Tyler S. Critical synthesis package: assessment of professional behaviors (APB). MedEdPORTAL Publications. 2014;10:9902. doi.org/10.15766/mep_2374-8265.9902.

MAAS-Global Manual 2000

Lacy N. Critical synthesis package: MAAS-global. MedEdPORTAL Publications. 2015;11:10028. dx.doi.org/10.15766/mep_2374-8265.10028.

UCSF Reflection Tool

Aronson L, Kruidering M, Niehaus B, O'Sullivan P. UCSF LEaP (learning from your experiences as a professional): guidelines for critical reflection. MedEdPORTAL Publications. 2012;8:9073. dx.doi.org/10.15766/mep_2374-8265.9073.

Professionalism Mini-Evaluation Exercise (P-MEX)

Gathright M. Critical synthesis package: professionalism mini-evaluation exercise (P-MEX). MedEdPORTAL Publications. 2014;10:9929. doi.org/10.15766/mep_2374-8265.9929.

Reflective Ability Rubric

O'Sullivan P, Aronson L, Chittenden E, Niehaus B, Learman L. Reflective ability rubric and user guide. MedEdPORTAL Publications. 2010;6:8133. doi.org/10.15766/mep_2374-8265.8133.

Evidence and Instruments in the Literature

Hancock J, Roberts M, Monrouxe L, Mattick K. Medical student and junior doctors' tolerance of ambiguity: development of a new scale. *Adv Health Sci Educ*. 2015;20(1):113-130. doi: 10.1007/s10459-014-9510-z.

Geller G, Tambor ES, Chase GA, Holtzman NA. Measuring physicians' tolerance for ambiguity and its relationship to their reported practices regarding genetic testing. *Med Care*. 1993;31(11):989-1001. (This scale is used currently at the AAMC.)

Gowda D, Blatt B, Fink MJ, Kosowicz LY, Baecker A, Silvestri, RC. A core physical exam for medical students: results of a national survey. *Acad Med.* 2014;89(3):436-442. doi: 10.1097/acm.0000000000000137.

Appendix 3: Behaviors and Vignettes

The *Core EPA Guide* produced by the AAMC contains additional detailed information that may be useful for curriculum designers.

1. For a convenient list of behaviors for this EPA that were used to develop a developmental progression, we refer you to the *Core EPA Guide*.

2. For exemplars of learner vignettes that highlight pre-entrustable and entrustable scenarios, please see the *Core EPA Guide*.

Appendix 4: The Physician Competency Reference Set (PCRS)

The Physician Competency Reference Set (Englander et al 2013) is provided for cross-referencing with the one-page schematic.

1. **PATIENT CARE (PC): Provide patient-centered care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health**
   - 1.1 Perform all medical, diagnostic, and surgical procedures considered essential for the area of practice
   - 1.2 Gather essential and accurate information about patients and their condition through history-taking, physical examination, and the use of laboratory data, imaging, and other tests
   - 1.3 Organize and prioritize responsibilities to provide care that is safe, effective, and efficient
   - 1.4 Interpret laboratory data, imaging studies, and other tests required for the area of practice
   - 1.5 Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment
   - 1.6 Develop and carry out patient management plans
   - 1.7 Counsel and educate patients and their families to empower them to participate in their care and enable shared decision making
   - 1.8 Provide appropriate referral of patients, including ensuring continuity of care throughout transitions between providers or settings and following up on patient progress and outcomes
   - 1.9 Provide health care services to patients, families, and communities aimed at preventing health problems or maintaining health
   - 1.10 Provide appropriate role modeling
   - 1.11 Perform supervisory responsibilities commensurate with one's roles, abilities, and qualifications
2. **KNOWLEDGE FOR PRACTICE (KP): Demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social–behavioral sciences, as well as the application of this knowledge to patient care**
   - 2.1 Demonstrate an investigatory and analytic approach to clinical situations
   - 2.2 Apply established and emerging biophysical scientific principles fundamental to health care for patients and populations
   - 2.3 Apply established and emerging principles of clinical sciences to diagnostic and therapeutic decision making, clinical problem solving, and other aspects of evidence-based health care
   - 2.4 Apply principles of epidemiological sciences to the identification of health problems, risk factors, treatment strategies, resources, and disease prevention/health promotion efforts for patients and populations
   - 2.5 Apply principles of social–behavioral sciences to provision of patient care, including assessment of the impact of psychosocial–cultural influences on health, disease, care-seeking, care compliance, and barriers to and attitudes toward care
   - 2.6 Contribute to the creation, dissemination, application, and translation of new health care knowledge and practices

3. PRACTICE-BASED LEARNING AND IMPROVEMENT (PBLI): Demonstrate the ability to 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 lifelong learning

- 3.1 Identify strengths, deficiencies, and limits in one's knowledge and expertise
- 3.2 Set learning and improvement goals
- 3.3 Identify and perform learning activities that address one's gaps in knowledge, skills, or attitudes
- 3.4 Systematically analyze practice using quality-improvement methods, and implement changes with the goal of practice improvement
- 3.5 Incorporate feedback into daily practice
- 3.6 Locate, appraise, and assimilate evidence from scientific studies related to patients' health problems
- 3.7 Use information technology to optimize learning
- 3.8 Participate in the education of patients, families, students, trainees, peers, and other health professionals
- 3.9 Obtain and utilize information about individual patients, populations of patients, or communities from which patients are drawn to improve care
- 3.10 Continually identify, analyze, and implement new knowledge, guidelines, standards, technologies, products, or services that have been demonstrated to improve outcomes

4. INTERPERSONAL AND COMMUNICATION SKILLS (ICS): Demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals

- 4.1 Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds
- 4.2 Communicate effectively with colleagues within one's profession or specialty, other health professionals, and health-related agencies (see also interprofessional collaboration competency, IPC 7.3)
- 4.3 Work effectively with others as a member or leader of a health care team or other professional group (see also IPC 7.4)
- 4.4 Act in a consultative role to other health professionals
- 4.5 Maintain comprehensive, timely, and legible medical records
- 4.6 Demonstrate sensitivity, honesty, and compassion in difficult conversations (e.g., about issues such as death, end-of-life issues, adverse events, bad news, disclosure of errors, and other sensitive topics)
- 4.7 Demonstrate insight and understanding about emotions and human responses to emotions that allow one to develop and manage interpersonal interactions

5. PROFESSIONALISM (P): Demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles

- 5.1 Demonstrate compassion, integrity, and respect for others
- 5.2 Demonstrate responsiveness to patient needs that supersedes self-interest
- 5.3 Demonstrate respect for patient privacy and autonomy

5.4 Demonstrate accountability to patients, society, and the profession
5.5 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
5.6 Demonstrate a commitment to ethical principles pertaining to provision or withholding of care, confidentiality, informed consent, and business practices, including compliance with relevant laws, policies, and regulations

6. SYSTEMS-BASED PRACTICE (SBP): Demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care

6.1 Work effectively in various health care delivery settings and systems relevant to one's clinical specialty
6.2 Coordinate patient care within the health care system relevant to one's clinical specialty
6.3 Incorporate considerations of cost awareness and risk–benefit analysis in patient and/or population-based care
6.4 Advocate for quality patient care and optimal patient care systems
6.5 Participate in identifying system errors and implementing potential systems solutions
6.6 Perform administrative and practice management responsibilities commensurate with one's role, abilities, and qualifications

7. INTERPROFESSIONAL COLLABORATION (IPC): Demonstrate the ability to engage in an interprofessional team in a manner that optimizes safe, effective patient- and population-centered care

7.1 Work with other health professionals to establish and maintain a climate of mutual respect, dignity, diversity, ethical integrity, and trust
7.2 Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of the patients and populations served
7.3 Communicate with other health professionals in a responsive and responsible manner that supports the maintenance of health and the treatment of disease in individual patients and populations
7.4 Participate in different team roles to establish, develop, and continuously enhance interprofessional teams to provide patient- and population-centered care that is safe, timely, efficient, effective, and equitable

8. PERSONAL AND PROFESSIONAL DEVELOPMENT (PPD): Demonstrate the qualities required to sustain lifelong personal and professional growth

8.1 Develop the ability to use self-awareness of knowledge, skills, and emotional limitations to engage in appropriate help-seeking behaviors
8.2 Demonstrate healthy coping mechanisms to respond to stress
8.3 Manage conflict between personal and professional responsibilities
8.4 Practice flexibility and maturity in adjusting to change with the capacity to alter behavior
8.5 Demonstrate trustworthiness that makes colleagues feel secure when one is responsible for the care of patients
8.6 Provide leadership skills that enhance team functioning, the learning environment, and/or the health care delivery system

8.7	Demonstrate self-confidence that puts patients, families, and members of the health care team at ease
8.8	Recognize that ambiguity is part of clinical health care and respond by using appropriate resources in dealing with uncertainty

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