Author Manuscript

ADEA Compendium: Entrustable Professional Activities (EPA) Workgroup Report

Vidya Ramaswamy PhD; Theodora Danciu DMD, DMSc; Erinne N. Kennedy DMD, MPH, MMSc; Laura Romito DDS, MS, MBA; Denice Stewart DDS, MHSA; Gulsun Gul DDS, MBA, MPH, MS; Phil Marucha (co-chair) DMD, PhD; Rocio B. Quinonez (co-chair) DMD, MS, MPH

Dr. Ramaswamy is the Director for Curriculum Evaluation and Promotion of Teaching and Learning at the University of Michigan, School of Dentistry, Ann Arbor.

Dr. Danciu is Clinical Professor and Director of Engaged Learning and Assessment at the University of Michigan, School of Dentistry

Dr. Kennedy is Assistant Professor and Assistant Dean for Curriculum and Integrated Learning at Kansas City University College of Dental Medicine

Dr. Romito is Professor and Associate Dean of Education and Academic Affairs at the Indiana University School of Dentistry in Indianapolis, Indiana

Dr. Stewart is Adjunct Professor at the Adams School of Dentistry, University of North Carolina at Chapel Hill

Dr. Gul is Chief of Innovation, Clinical Education & Public Health at the American Dental Association

Dr. Marucha is Professor, School of Dentistry, Oregon Health & Science University

Dr. Quinonez is Professor and Associate Dean for Curriculum at the Adams School of Dentistry, University of North Carolina at Chapel Hill

Abstract

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1002/jdd.13542.

This article is protected by copyright. All rights reserved.

Author Manuscript

Purpose: Entrustable Professional Activities (EPAs) are discrete clinical tasks that can be evaluated to help define readiness for independent practice in the health professions and are intended to increase trust in the dental graduate. EPAs provide a framework that bridges competencies to clinical practice. This report describes the work of the ADEA Compendium EPA workgroup to develop a list of EPAs for dental education and supportive resources, including specifications and a glossary.

Methods: Preliminary work including literature and resource review, mapping of existing competencies, and review of other health professions' EPAs informed the development of our EPAs list. Workgroup members achieved consensus using a modified Delphi process. A Qualtrics survey using a validated rubric for the assessment of EPAs as described in peer-reviewed literature was used. Dental educators, including academic deans, were surveyed for feedback on the content and format of the EPAs.

Results: Based on findings in the literature analysis of existing EPAs and competencies in health professions, a list of EPAs was developed along with a description of specifications. The EPA workgroup (nine members from multiple institutions) used the Delphi process in receiving feedback from various experts. A list of 11 core EPAs was vetted by dental educators including academic deans (n=~23), and the process of development was reviewed by EPAs experts outside dental education. A glossary was developed to align language.

Conclusion: These EPAs define the scope of dental practice. This report represents Phase 1 of the EPA framework development and vetting process. Future directions will include a broader vetting of the EPA list, faculty development, and national standardized technology that support this work to optimize implementation.

Introduction

This article is protected by copyright. All rights reserved.

Author Manuscript

The purpose of this article is to provide an assessment framework for the practice of dentistry. The report describes the evolution of assessment practices in dental education and outlines the work of the American Dental Education Association (ADEA) Compendium EPA workgroup that generated a validated list of entrustable professional activities (EPA) for use in predoctoral dental education programs. This framework focuses on the assessment of a predoctoral dental student's competency and readiness for independent practice. At the core of the EPA framework is the question: Can we entrust the trainee to perform the core activities without supervision in the workplace setting?

EPAs represent the tasks of a dentist that collectively help define the profession.[1,2] EPAs are forward-looking and, when examined longitudinally, can provide more robust data to predict future behaviors.[3] EPAs are: (a) **Observable and measurable**, as they are focused on activities for a graduating dentist to perform rather than inferred or isolated competencies; (b) **Independence-focused**, as they emphasize the trainee's ability to demonstrate trustworthiness in performing a clinical task without supervision or assistance; and (c) **Workplace-based,** in that they are evaluated in authentic workplace settings or similar situations, allowing for patient-centric assessment.

"EPAs are not an alternative for competencies but a means to translate competencies into clinical practice" (p 157).[1] Consider learning to drive as an analogy for becoming a competent dentist. A student driver may demonstrate core competencies such as the ability to understand the rules of the road, critical thinking, or driving etiquette. However, demonstrating courtesy to other drivers, passing the driving exam, and critically mapping out a route do not necessarily mean one can safely drive. Not captured in a singular driving assessment is the ability to adapt to various challenges such as rain, snow, hills, or gravel roads. EPAs help bridge individual competencies with broader clinical practice and provide a more standardized and concrete framework for assessment.[4]

This article is protected by copyright. All rights reserved.

Author Manuscript

Background

Best practices in assessment in health professions education have evolved through the decades. In the 1990s, health professions education underwent a shift from discipline-based to competency-based curricula.[5] Simultaneously, the Institute of Medicine (IOM) conducted an independent assessment of dental education[6] that supported a change from the traditional care model to one focused on comprehensive patient care (**Table 1**).

After nearly two decades, these two movements resulted in a competency-based education focused on comprehensive care, codified by the Commission on Dental Education (CODA) in 2008. Two ADEA publications reinforced the need for changes in student assessment to support this model of education.[7,8] In 2010, CODA added that programs should assess overall competency, not simply individual competencies, to measure a student's readiness to enter the practice of dentistry. In 2019, CODA standards emphasized that "competence is an ongoing process that requires a variety of assessments that can measure not only the acquisition of knowledge and skills but also assess the process and procedures which will be necessary for entry level practice".[9] While significant change has occurred, remnants of past approaches still exist in current assessment practices. Singular, high-stakes competence assessments focused on individual clinical skills may not be sufficient to assess an individual's long-term competency for independent practice.

The ADEA Compendium of Clinical Competency Assessment

In 2018, the ADEA Compendium of Clinical Competency Assessment Workgroup was developed to explore alternate pathways to initial licensure, moving away from a single-encounter, procedure-based examination on patients.[10] The compendium focused on three foundational components of evaluation: first, multiple assessments over time with multiple evaluators;[11] second, independent and repeated care that meets or exceeds expectations;[12] and

This article is protected by copyright. All rights reserved.

finally, patient care assessed in multiple dimensions in an authentic setting similar to that of a real practice.[13]

This system of clinical performance assessment integrates calibrated faculty using standardized rubrics that include the evaluation of independence. These assessments are collected and documented over time for many patients so that the overall assessment of competence considers varying complexities of patient experiences. Based on work in other health professions, an EPA model was proposed as a framework for change.[9]

ADEA Compendium Entrustable Professional Activities (EPA) Workgroup

During the COVID-19 pandemic, efforts dedicated to the ADEA Compendium of Competency Assessment were suspended to shift resources toward oral health schools and programs. Other institutions were engaged in evaluating whether the use of EPAs in dental education would be beneficial, as research was suggesting that EPAs were successfully implemented in medical education and other health professions programs.[14-16] In 2022, the ADEA Compendium EPA Workgroup was formed. The goals of this multidisciplinary and inter-institutional team were to: (a) develop EPAs for dental education; (b) conduct pilot studies to evaluate EPA content, the assessment process, and the tools used for calibration, data collection, and analysis; (c) gauge the reliability and validity of the EPA assessment of readiness for practice; (d) publish and disseminate peer-reviewed scholarship and provide educational programs; and (e) provide information to establish a national standardized and customizable system to support the Compendium's goals.

The ADEA Compendium EPA Workgroup (Appendix A) assessed the use of EPAs in dental education and other health professions while identifying potential barriers to implementation and adoption in dental education. A core EPA workgroup was formed in 2023 from the larger group to facilitate the development of the first phase of the charge. The focus shifted from competency assessment from the ADEA Compendium to inclusion of EPAs that

This article is protected by copyright. All rights reserved.

Author Manuscript

operationalized competency-based education. These EPAs connected progressive attainment of proficiency with progressive autonomy or independence in clinical care. This was deemed to be in keeping with the key attributes identified in the original ADEA Compendium: multiple assessments over time (global assessment portfolios) and the evaluation of independence; i.e., readiness for practice.

Methods

Preliminary work: This project had approval from Institutional Review Board/University of Michigan (IRB: HUM00132427). The ADEA Compendium EPA Workgroup was composed of diverse members (**Appendix A**) and came together to explore the possibility of creating a list of EPAs for dental education, specifically for the DDS (Doctor of Dental Surgery) or DMD (Doctor of Dental Medicine) program. This group functioned as a learning community. Members of the ADEA Compendium EPA Workgroup reviewed the EPAs literature and resources for dental education and other health professions. They also reviewed EPAs in other fields such as medicine, veterinary medicine, and pharmacy.[17-19] The process was informed by elements from the International EPA training course.[20]

The Delphi process: Delphi is a recognized and accepted method for standard-setting and uses expert consensus among various significant constituents.[21-23] The team designed an initial list of EPAs for dental education. Using the Delphi process, workgroup members began refining the initial list. The workgroup used an iterative ranking until they reached a desired level of agreement or achieved a point of consensus for each EPA. The process involved multiple rounds of individual evaluation followed by group discussion to refine the final outcome. For each round of the Delphi process, members assessed each EPA according to the following attributes of quality and structure:

1. Clearly defined beginning and end
2. Independently executable to achieve a defined clinical outcome

This article is protected by copyright. All rights reserved.

Author Manuscript

3. Specific and focused
4. Observable in process
5. Measurable in outcome
6. Clearly distinguished from other EPAs in the framework

Mapping to CODA standards: These EPAs mapped to the CODA standards and the list of competencies for the general dentist. This was additional verification that all relevant tasks of the dentist were included in the list of EPAs.

Feedback from academic deans and their counterparts/development of additional materials: Academic deans and their counterparts from multiple dental schools (N= ≈23) attending the ADEA Fall Meetings in October 2023 evaluated the list of EPAs. The Qualtrics survey included one subscale of the EQual rubric to evaluate if each EPA was a discrete activity.[24]

Development of supplementary materials: Next, the workgroup members outlined the scope of and specifications for each EPA. The group developed a glossary to align the lexicon with that of other health professions.

Dissemination to other vital groups: The team engaged in presentations and interactions to promote the EPAs **(Table 2)**.

Feedback from key experts in healthcare education: Final review included obtaining feedback from experts (n=6) on health professions education EPAs. Experts expressed their opinions about the development process, impression of the list of EPAs, and recommendations for change management.[25]

Domains of competence (ongoing): The domains of competence serve as building blocks for EPAs. A single EPA draws upon multiple competencies from various domains of competence (for example, critical thinking, professionalism, foundational knowledge, etc.). Identifying these domains is critical to the process of establishing EPAs. One ADEA Compendium EPA Workgroup member who is also a ADEA Council of Faculty representative is collaborating

This article is protected by copyright. All rights reserved.

Author Manuscript

with the Council to develop the domains of competence based on the initial work done by the Compendium.

Results

Preliminary work:

The EPA development process was completed in approximately 18 months. The ADEA Compendium EPA Workgroup included representatives from six different US schools and two ADEA staff. As part of the initial review of literature, the ADEA Compendium EPA Workgroup (**Appendix A**) embraced four guiding principles in the EPA development. These principles were: (a) a focus on predoctoral dental education, (b) alignment with other health professions, (c) flexibility to allow for emerging trends, and (d) generating EPAs which include discrete tasks that overlap and nest within existing EPAs.

The Delphi process: After multiple Delphi rounds over a period of a few months, the workgroup completed the first definitive draft of EPAs (**Table 3**). These EPAs cover the scope of dental practice for new dentists. The consensus-building process ensured agreement that these EPAs constituted core tasks of the dental profession and were clearly distinct activities that could be assessed independently.

Mapping to CODA standards: CODA standards define current national guidelines for competence. Mapping the EPAs to CODA standards provided additional validation that the EPAs are a valid measure of readiness for practice (**Table 3**).

Feedback from academic deans and their counterparts/development of additional materials:

Results from the survey of the ADEA Section on Academic Affairs group attendees (academic deans and their counterparts) at the 2023 ADEA Fall Meetings suggested that the EPAs were well defined. There was overall agreement that the EPA list represented discrete

This article is protected by copyright. All rights reserved.

Author Manuscript

Author Manuscript

units of work for the workplace setting for a graduating dentist. Mean ratings for the six items on the EQual rubric for all the EPAs indicate scores were at the higher end of the scale, suggesting that the EPAs were perceived as discrete units of work (**Table 4**). These data suggest that these activities, if assessed together, define the scope of what a graduating dentist needs to execute in a workplace setting.

Development of supplementary materials: To facilitate clarity and understanding of the EPA framework for future use, the group worked on a glossary (**Table 5**) and reviewed it for final accuracy. The glossary provides definitions for all the relevant concepts related to the EPA framework. In addition, two members of the group also worked to define the specifications of each EPA and reviewed these with the group. These specifications further define the EPAs and provide more details for the execution of these core activities in clinical practice.

Dissemination to other vital groups: A critical part of the process was to periodically (2023-2024) share the EPA framework with multiple groups. These groups included deans, administrators, and predoctoral educators. The purpose of these sessions was to both share information and obtain feedback.

Feedback from key experts in healthcare education: Feedback from six experts in nondental healthcare education indicated agreement that the process to develop these EPAs was valid and that these EPAs constituted a complete list of core activities of the dental profession. This expert validation from experts outside dental education served as an additional verification that these EPAs are ready for application in predoctoral dental education.

Discussion

This report outlines a set of EPAs for dental education developed by experts through a consensus building process. It encapsulates the first phase of the ADEA Compendium EPA

This article is protected by copyright. All rights reserved.

Workgroup and provides a framework as a starting point for dental schools to engage in EPAs. Research widely recognizes the effectiveness of competency-based education in health professions.[26,27] Distinct from competencies which indicate trainee's attributes/capacities, EPAs are discrete units of work that bring together multiple competencies creating a more holistic assessment framework. EPAs are emerging as the main form of assessment of health profession trainees to promote institutional development, oral health innovation, care quality, and safety.[15]

The ADEA Compendium EPA Workgroup met to develop a list of EPAs for predoctoral dental education programs using ten Cate's model and aligning with other areas of healthcare education. A starting framework of EPAs for dental education provides the foundation for a useful and effective assessment system.

Over 18 months, the workgroup composed of diverse members used the Delphi consensus-building process to refine a list of 11 EPAs through repeated iteration. Workgroup members also engaged with experts from other fields, academic deans, and other academic faculty. To verify that all relevant dentist tasks were included in the list of EPAs, the group mapped these EPAs to CODA standards and the competencies of the general dentists.[7,28] Input from four educators in health professions outside dentistry suggested that these EPAs were well defined.

Over the next few months, we plan to map the EPA-based framework to relevant domains of competence. The 2008 ADEA Competencies for the New General Dentist are currently under review by members of the ADEA Council of Faculties. The ADEA House of Delegates will vote on their final recommendations at the 2025 ADEA Annual Session & Exhibition. Subsequently, the Compendium will map the EPAs to the revised domains of competence specific for dental education.

Author Manuscript

This article is protected by copyright. All rights reserved.

Author Manuscript

The Workgroup agrees with the statement from the Association of American Medical Colleges (AAMC) Core EPAs pilot that each school must determine how to incorporate the core EPAs into its unique curriculum. Researchers have suggested that when an institution chooses to implement EPAs, faculty should establish a formal entrustment procedure, clarify formative and summative assessments, establish a curriculum that scaffolds learning, and equip faculty to assess and implement EPAs.[19]

For successful piloting and eventual EPA implementation, dental education should aim for: (a) broad constituent engagement and leadership, (b) faculty and trainee development, and (c) additional support systems within the curriculum.[29] The purpose of these guidelines is to enhance the integration of EPAs into dental education, thereby supporting the development of competent dental professionals equipped for the demands of clinical practice.

Next steps

Subsequent phases will require support at the national and local level. Implementing such a framework nationally requires more than minor adjustments; it demands a fundamental change in how we approach assessment and entrustment. This paradigm involves the implementation of EPA-based curriculum, entrustment scales, and faculty development guidelines. Establishing an electronic assessment system for data tracking is also necessary, and will aid in managing student outcome data and building a longitudinal portfolio.

At the local level, by integrating each EPA into a unique curriculum in future work, our workgroup aims to outline the developmental trajectory for each core EPA by defining levels of supervision, identifying independence scales, and suggesting ways in which the EPA framework can be successful at each individual institution. The success of the EPA framework will rely on a collaborative effort between all institutions.

Strengths and limitations

This article is protected by copyright. All rights reserved.

Author Manuscript

The value of this report is the preliminary presentation of the EPA framework in dental education. The benefit of the EPA framework is a strong focus on the entrustment of the trainee to carry out core tasks of the profession in a workplace setting. This requires comprehensive EPA descriptions outlining the task, necessary knowledge, skills, and attitudes (KSAs), assessment methods, and expected timeline for achieving competency (milestones) within the educational program. EPAs provide a way to monitor the ongoing development of student practitioners, which could allow for earlier clinical experiences for some trainees.

EPAs will help our profession prepare for the future and adapt to its challenges. As clinical tasks evolve, EPAs can evolve with them. The design can cater to the immediate learning expectations of the student and use milestones to define student progress, the required supervision level, and the timeframe within their educational program.

The EPA system generates abundant data about student learning and the efficacy of the educational processes. Integrating these data with advanced computational methods such as artificial intelligence and deep learning technologies can transform dental education and curricular approaches. Such a shift could significantly enhance the ability of dental institutions to meet future challenges. EPAs also allow programs to adjust learning modalities based on the student's learning level to foster personalized experiences.

The workgroup used a sound methodology to derive this initial list of EPAs as a conceptual model. However, the workgroup recognizes the work still needed to test these EPAs in educational settings. This process will entail reviewing competencies from national and international dental education bodies and health professions education. This review may lead to potential changes to the EPA list.

Conclusion

This article is protected by copyright. All rights reserved.

Author Manuscript

The ADEA Compendium EPA Workgroup is committed to engaging the broader community in this process. We aim to provide evidence-based recommendations for applying EPA-based evaluations in dental education. The success of this framework relies on collaborative efforts to expand its applicability beyond individual institutions. Adopting an EPA framework will necessitate a culture shift beyond simply learning new terminology and adjusting assessments. It is crucial to assess a student's ability over time to independently perform, across various contexts, the tasks that define our profession. The adoption of an EPA framework is crucial to ultimately ensure outstanding care for our patients and the trust of the public.

References:

1. ten Cate. Nuts and bolts of Entrustable Professional Activities. *J Grad Med Educ.* 2013 Mar; 5(1): 157–158. doi: 10.4300/JGME-D-12-00380.1
2. ten Cate. Entrustment decisions: Bringing the patient into the assessment equation. *Acad Med*. 2017 Jun;92(6):736-738. doi: 10.1097/ACM.0000000000001623.
3. Schumacher DJ, Cate OT, Damodaran A, Richardson D, Hamstra SJ, Ross S, Hodgson J, Touchie C, Molgaard L, Gofton W, Carraccio C; ICBME Collaborators. Clarifying essential terminology in entrustment. *Med Teach*. 2021 Jul;43(7):737-744. doi: 10.1080/0142159X.2021.1924365. Epub 2021 May 14.PMID: 33989100
4. Quinonez RB, Danciu T, Ramaswamy V, Murdoch-Kinch CA. Bridging the gap between dental education and clinical practice: The entrustable professional activities model. *J Am Dent Assoc*. 2023;154(8):687-9.
5. Chamber D. Competency-based dental education in context. *Eur J Dent Educ*. 1998;2(1):8-13.

This article is protected by copyright. All rights reserved.

Author Manuscript

6. Dental Education at the Crossroad – Challenges and Change. Institute of Medicine, National Academy Press, Washington, DC, 1995.
7. ADEA Competencies for the New General Dentist 2008 https://www.adea.org/about_adea/governance/pages/competencies-for-the-new-general-dentist.aspx
8. Beyond the Crossroad – Change and Innovation in Dental Education 2009 https://onlinelibrary.wiley.com/doi/abs/10.1002/j.0022-0337.2009.73.1.tb04636.x?sid=nlm%3Apubmed
9. ADEA Summit on the Future of Assessment in Dental Education held in 2019 file:///C:/Users/stewartd/Downloads/ADEA%20Assessment%20Summit%20Report%203-11-19.pdf
10. Friedrichsen SW. The ADEA compendium of clinical competence assessments: A potential pathway to licensure. *CDAJ.* 2020;48(7):321-29.
11. Gadbury-Amyot CC, Overman PR. Implementation of portfolios as a programmatic global assessment measure in dental education. *J Dent Educ* 2018 Jun;82(6):557–564.
12. American Association of Medical Colleges. Core Entrustable Professional Activities for Entering Residency. 2014. Washington D.C. www.aamc.org/system/files/c/2/484778-epa13toolkit.pdf
13. Holmbee ES, Durning SJ, Hawkins RE. Practical guide to the evaluation of clinical competency. 2nd ed. Philadelphia: Elsevier; 2017.
14. Ramaswamy V, Fitzgerald M, Danciu T, et al. Entrustable professional activities framework for assessment in pre-doctoral dental education, developed using a modified Delphi process. *J Dent Educ*. 2021;85:1349-1361.

This article is protected by copyright. All rights reserved.

Author Manuscript

15. Wolcott, M, Quinonez, RB, Ramaswamy V. Murdoch-Kinch CA. Can we talk about trust? Exploring the relevance of "Entrustable Professional Activities" in dental education. *J Dent Educ*. 2020;*84*(9), 945–948. https://doi.org/10.1002/jdd.12354

16. Quinonez RB, Tittemore A, Mason M, Broome A, Wolcott M, Kornegay B, Phillips K, King J, Duqum I, Swift E. Preparing for implementation of an entrustable professional activity assessment framework. *J Dent Educ*. 2022;86(11):1529-33.

17. AAVMC Working Group on Competency-Based Veterinary Education, Molgaard, L.K., Hodgson, J.L., Bok, H.G.J., Chaney, K.P., Ilkiw, J.E., Matthew, S.M., May, S.A., Read, E.K., Rush, B.R., Salisbury, S.K. (2018) Competency-Based Veterinary Education: Part 2 - Entrustable Professional Activities. Washington, DC: Association of American Veterinary Medical Colleges.

18. Haines ST, Pittenger AL, Stolte SK, Plaza CM, Gleason BL, Kantorovich A, McCollum M, Trujillo JM, Copeland DA, Lacroix MM, Masuda QN, Mbi P, Medina MS, Miller SM. Core Entrustable Professional Activities for New Pharmacy Graduates. Am J Pharm Educ. 2017 Feb 25;81(1):S2. doi: 10.5688/ajpe811S2. PMID: 28289312; PMCID: PMC5339597.

19. Lomis K, Amiel JM, Ryan MS, Esposito K, Green M, Stagnaro-Green A, Bull J, Mejicano GC, & AAMC Core EPAs for Entering Residency Pilot Team. Implementing an Entrustable Professional Activities Framework in Undergraduate Medical Education: Early Lessons From the AAMC Core Entrustable Professional Activities for Entering Residency Pilot. *Acad Med.* 2017;92(6), 765–770. Available at: https://doi.org/10.1097/ACM.0000000000001543

20. ten Cate, O. 2023International Course- Ins and Outs of Entrustable Professional Activities. Available at: https://www.umcutrecht.nl/en/online-international-courses-ins-and-outs-of-entrustable-professional-activities. Accessed on: February, 2024.

This article is protected by copyright. All rights reserved.

Author Manuscript

21. Nasa P, Jain R, Juneja D. Delphi methodology in healthcare research: How to decide its appropriateness. World J Methodol. 2021;11(4): 116–129.

22. Drumm S, Bradley C, Moriarty F. 'More of an art than a science'? The development, design and mechanics of the Delphi Technique. Res Social Adm Pharm. 2022 Jan;18(1):2230-2236. doi: 10.1016/j.sapharm.2021.06.027. Epub 2021 Jul 3. PMID: 34244078.

23. de Villiers MR, de Villiers PJ, Kent AP. The Delphi technique in health sciences education research, Medical Teacher. 2005;27:7, 639-643.

24. Taylor DR, Park YS, Egan R, Chan MK, Karpinski J, Touchie C, Snell L, Tekian A. Equal, a novel rubric to evaluate Entrustable Professional Activities for Quality and Structure. Acad Med. 2017 Nov;92(11S Association of American Medical Colleges Learn Serve Lead: Proceedings of the 56th Annual Research in Medical Education Sessions):S110-S117. doi: 10.1097/ACM.0000000000001908.

25. Personal Communication: Dr. Daniel Schumacher, Director Education Research Unit, Department of Pediatrics, University of Cincinnati; Dr. George Mejicano, Associate Dean for Academic Affairs, Carle Illinois College of Medicine, Dr. Logan Jones, Chair-Entrustment Group, OHSU School of Medicine; Dr. Ted Mashima, Chief Strategy Officer, & Dr. Heather Fedesco, Assistant Director of the Spectrum of Care Initiative, Dr. Jessica Brodsky, Educational Researcher for Spectrum of Care (American Association of Veterinary Medical Colleges).

26. ten Cate O. How can Entrustable Professional Activities serve the quality of health care provision through licensing and certification? *Can Med Educ J*. 2022;*13*(4), 8–14.

27. Bramley AL, & McKenna L. Entrustable professional activities in entry-level health professional education: A scoping review. *Med Educ.* 2021;55(9), 1011–1032.

This article is protected by copyright. All rights reserved.

Author Manuscript

28. CODA Commission on Dental Accreditation: Accreditation Standards for Dental Education Programs. 2023. Available at: https://coda.ada.org/-/media/project/ada-organization/ada/coda/files/predoc_standards.pdf?rev=20eabc229d4c4c24a2df5f65c5ea62c8&hash=B812B8A2FAF6D99F37703EE081B48E58. Accessed on: February 11, 2024.

29. Stoffman JM. Overcoming the barriers to implementation of competency-based medical education in post-graduate medical education: a narrative literature review. Med Educ Onlin. 2022; 27(1):2112012. doi: 10.1080/10872981.2022.2112012.

Table 1: Comparison between traditional and comprehensive care models in dental education.

Traditional care	Comprehensive care
Specialist role model	Generalist role model
Student-centered instruction	Patient-centered education
Segmented patient care	Continuous patient care
Focus on procedure	Focus on evaluation and management
Numerical requirements	Competency criteria

Table 2: Team presentations and interactions to promote EPAs.

Date	Location	Meeting Name	Title
1/18/2023	Washington, DC	Joint Council Administrative Board meeting 2023	Graduates' Readiness to Practice: Moving from Assessment to Entrustment. Dr. Carol Anne Murdoch-Kinch
3/12/2023	Portland, OR	2023 ADEA Annual Session	From "Assessment" to "Entrustment" to "Readiness for Practice": The ADEA Compendium – EPA Framework for Assessment of Competency, Drs. Philip Marucha, Theodora Danciu. Rocio Quinonez
5/22/2023	Orlando, FL	American Academy of Pediatric Dentistry Predoctoral Meeting	Entrustable Professional Activities for Pediatric Dentistry: Predoctoral Education Drs. Miguel Simancas-Palleres, Rocio Quinonez

This article is protected by copyright. All rights reserved.

Author Manuscript

6/30/2023	Virtual	ADEA Webinar video	Recording of the ADEA Annual Session Presentation for ADEA eLearn Portal Drs. Theodora Danciu, Philip Marucha, Rocio Quinonez
9/23/2023	Austin, TX	American Academy of Periodontology Predoctoral Meeting	AAP Predoc Workshop: EPAs in Dentistry Dr. Phil Marucha
10/ 26/2023	Pittsburg, PA	ADEA Fall meetings	ADEA Compendium EPA Workgroup
2/16/2024	Virtual	ADEA Dean's Town Hall	Update on the ADEA Compendium EPA Workgroup. Drs. Rocio Quinonez, Phillip Marucha
3/9/2024	New Orleans, LA	2024 ADEA Annual Session	A roadmap to EPAs and their assessment in dental education: Results from the ADEA Workgroup, EPA Workgroup
3/10/2024	New Orleans, LA	2024 ADEA Annual Session	2024 ADEA Compendium EPA Workshop, EPA Workgroup

Table 3: Entrustable Professional Activities developed by the ADEA Compendium-EPA workgroup for predoctoral dental education and associated specifications.

EPA 1	Gather history

Addresses CODA Standards: 2-16, 2-17

- Identify the patient's chief oral health concern and history of present concern.
- Obtain a complete and accurate medical, dental, and social history in an organized fashion.
- Demonstrate patient-centered interview skills (i.e., attention to patient's verbal and nonverbal cues, patient/family culture, social determinants of health, and need for interpretive or adaptive services).
- Seek conceptual context of chief concern and any medical/dental conditions; approach the patient holistically and demonstrate active listening skills.
- Identify pertinent elements in the patient's medical, dental, and social histories in common presenting situations, symptoms, complaints, and disease states (i.e., acute or chronic).
- Obtain focused and pertinent medical, dental, and social histories in urgent, emergent, and consultative settings.
- Consider cultural and other factors that may influence the patient's description of symptoms.

This article is protected by copyright. All rights reserved.

Author Manuscript

- Identify and use alternate sources of information to obtain history when needed, including but not limited to family members, living facility medical staff, primary/specialty care providers, pharmacy staff, and other health care workers.
- Demonstrate clinical reasoning in gathering focused information relevant to a patient's care.
- Demonstrate an awareness of cultural difference (for example, by recognizing that one's own cultural models may be different from others) and the potential for bias (conscious and unconscious) in interactions with patients, caregivers, and other healthcare team members.

EPA 2	Perform examination

Addresses CODA Standards: 2-15, 2-24a

- Obtain and record vital signs and data from physical examination assessments, which may include, but are not limited to, blood pressure, pulse, heart rate and rhythm, temperature, blood glucose, cholesterol, salivary function, composition, microbiome and salivary diagnostics, and other point-of-care screening tests as they become available.
- Perform, evaluate and document intraoral and extraoral radiographic findings.
- Examine extraoral and intraoral soft and hard tissues.
- Examine the TMJ and associated structures.
- Examine the periodontium.
- Examine the dentition, restorations/prostheses for caries, and appropriate structure and function including occlusion.

EPA 3	Generate a differential diagnosis

Addresses CODA Standards: 2-10, 2-14, 2-22, 2-24a

- Contextualize the examination findings with the patient's medical, dental, and social history.
- Develop and document differential diagnoses for all significant findings.
- Use critical thinking skills to prioritize the differential diagnoses, determine the need for other tests to confirm the diagnosis, the need for interim treatments that may lead to definitive diagnoses, the necessity for treatment based on prognosis and urgency, and/or the need for referral to an advanced care provider when the case exceeds their skill level.

EPA 4	Recommend and interpret risk assessment, screening, and/or diagnostic tests

Addresses CODA Standards: 2-10, 2-14, 2-22, 2-24a

This article is protected by copyright. All rights reserved.

Author Manuscript

- Determine the need for and perform risk assessments for oral and systemic disease including radiographic assessments, chairside systemic disease screening, biopsy, pulp testing, salivary function, composition, microbiome assessment, and salivary diagnostics, where the tests are supported by scientific evidence.
- Address identified risk factors and indicators for oral/systemic diseases in the planned care.

EPA 5 Diagnose oral and maxillofacial conditions

Addresses CODA Standards: 2-10, 2-14, 2-21, 2-24a

- Generate a list of systemic and oral diagnoses and conditions based on the medical/dental/social histories, the examination of the patient, risk assessments, and diagnostics tests.
- Develop an individualized prognosis for each diagnosis/condition.
- Address each diagnosis and condition in the comprehensive plan of care.

EPA 6 Plan care and obtain informed consent

Addresses CODA Standards: 2-10, 2-16, 2-21, 2-22, 2-24a

- Develop an evidence-based, phased plan for providing sequenced care based on medical/dental/social history, the patient's chief complaint, examination findings, risk assessment, diagnoses, and prognoses. The plan will include the following phases: Urgent care, Disease control, Re-evaluation, Definitive care, and Maintenance.
- Engage the patient/patient advocate to inform them of potential treatments, benefits, risks, alternatives, and costs, and ensure the patient/patient advocate plays an active role in determining the plan.
- Obtain informed consent from the patient/patient advocate for the overall plan and for specific procedures requiring separate consent through a structured communication process.

EPA 7 Coordinate care

Addresses CODA Standards: 2-15, 2-17, 2-20, 2-24c, 2-24o

- Engage in collaborative care between oral healthcare team members and other healthcare professionals (e.g., medicine, nursing, nutrition, social work, pharmacy, etc.).
- Conduct safe, timely, effective, efficient collaborative care, through verbal and/or written communication that is essential to providing optimal, evidence-based, person-centered, and equitable patient care.
- Refer to an advanced care provider when treatment is beyond the scope of the dental clinician and when the patient exhibits behavioral/physical symptoms needing care

This article is protected by copyright. All rights reserved.

Author Manuscript

(e.g. high blood pressure, a screening test indicating potential systemic disease, or a mental health condition).

- Refer to a healthcare provider when a patient has systemic diseases/conditions that create a potential risk for receiving oral health care and require further evaluation.

EPA 8	Perform preventive care

Addresses CODA Standards: 2-15, 2-16, 2-24d

- Engage the patient in preventing or arresting oral and systemic diseases; address behaviors that alter oral disease risk based on current scientific evidence and the patient's personalized risk assessment.
- Provide individualized instruction and counseling in personalized oral hygiene procedures, nutrition, substance use, smoking cessation, and other health promotion activities.
- Assess the risk factors for oral disease, including the application of specific preventive treatments such as sealants, fluorides, remineralization treatments, and topical/systemic medications intended to alter oral microflora or salivary composition and flow.

EPA 9	Perform general dentistry procedures

Addresses CODA Standards: 2-10, 2-15, 2-16, 2-21, 2-24

- These activities encompass the procedures provided by the general dentist using universal design to ameliorate disease and restore form, function and esthetics for a diverse population of patients across the lifespan, identity, and medical condition. These procedures impact the overall health and quality of life of the patient. Included in this EPA is an understanding of when the procedure exceeds the training/skills of the general dentist and requires collaborative care.

EPA 9a	Manage pharmacological and nonpharmacological interventions

Addresses CODA Standards: 2-24e

- Prescribe evidence-based interventions for the management of oral diseases and conditions including antibiotics, antivirals, antifungals, analgesics, steroids, and/or supplements.
- Provide nonpharmacologic care including the use of therapeutic interventions to alter the microbiome or to prevent, treat, or modify the oral environment.

EPA 9b	Administer local anesthetic

Addresses CODA Standards: 2-24e

This article is protected by copyright. All rights reserved.

Author Manuscript

- Prevent or reduce pain during and after procedures with the use of local anesthetics including topicals, sedation or nitrous oxide where appropriate, behavior modification, analgesics and other methods (e.g., hypnosis, acupuncture, lasers, etc.)

EPA 9c	Manage non-carious and carious loss of tooth structure

Addresses CODA Standards: 2-24 d, f, h

- Recognize/diagnose the stages of caries and apply therapeutic evidence-based surgical or non-surgical care based on diagnosis.
- Perform therapies to non-surgically preserve/restore tooth structure and use interim therapeutic restorations to manage initial carious lesions on root or coronal surfaces.
- Restore form, function, and esthetics when tooth structure has been compromised by caries, trauma, attrition, erosion or other causes using either direct methods (e.g., composites placed directly in cavity preparations) or indirect methods (e.g., crown fabrication and placement) on root or coronal surfaces.

EPA 9d	Manage edentulism

Addresses CODA Standards: 2-24h

- Replace single missing teeth, several missing teeth, or all teeth.
- Design prostheses to address occlusion, esthetics, loss of vertical dimension, risk assessment of the prosthesis and/or remaining teeth, prognosis of the restorations, and properties of the materials to be used.
- Provide fixed prosthodontics for tooth replacement.
- Plan and restore implants.
- Design removable partial dentures, removable full dentures, and/or hybrid restorations.

EPA 9e	Manage periodontal diseases

Addresses CODA Standards: 2-24i

- Evaluate inflammation and periodontal findings in the context of host response modifiers/systemic conditions.
- Diagnose and treat uncomplicated gingival disease and stage I and II periodontitis using periodontal data collection, analyses, and instrumentation.
- Manage stage III and IV periodontitis.
- Assess the response to initial therapy to determine whether disease is under control or requires additional therapy or referral to an advanced care provider.
- Evaluate, manage, and refer based on signs and symptoms of inflammation at all stages of care.

This article is protected by copyright. All rights reserved.

Author Manuscript

EPA 9f	Manage pulpal disease

Addresses CODA Standards: 2-24j

- Recognize/diagnose pulpal disease, ameliorate pain/infection when possible, determine etiology, determine the prognosis, provide definitive therapy if it is within their level of skill, and refer to an advanced care provider when applicable.
- Restore or replace tooth/teeth with pulpal disease.

EPA 9g	Manage malocclusion

Addresses CODA Standards: 2-24n

- Identify and categorize malocclusion, understand normal tooth/jaw relationships or behaviors that might predict the need for interventional care; intervene if needed to prevent malocclusion, provide space maintenance when there is tooth loss, and/or improve airway patency.
- Refer to an advanced care provider when the case exceeds their skill level.

EPA 9h	Manage hard and soft tissue surgery

Addresses CODA Standards: 2-24k, l

- Provide minor surgical procedures that include suturing intraoral lacerations, simple extraction of teeth, biopsy, and incision/drainage of dental abscesses.
- Prevent and/or manage sequelae of surgical procedures.
- Refer to an advanced care provider when the case exceeds their skill level.

EPA 9i	Manage hard and soft tissue pathology

Addresses CODA Standards: 2-24b, k

- Detect, describe, and provide a differential diagnosis for alterations from the typical appearance of hard and soft tissues.
- Monitor, remove the cause of inciting injury, excision, biopsy for definitive diagnosis, and/or systemic/topical medications using evidence-based practice.
- Evaluate, and manage TMD and related orofacial pain disorders using evidence-based practice.
- Refer to an advanced care provider when the case exceeds their skill level.

EPA 10	Manage medical and dental emergencies

Addresses CODA Standards: 2-18, 2-24m, 5-6

- Medical emergencies:

This article is protected by copyright. All rights reserved.

Author Manuscript

- Conduct patient-specific risk assessment to prevent medical emergencies.
- Recognize, initiate management, and seek help promptly when/if medical emergencies occur.
- Refer to an advanced care provider when the case exceeds their skill level.

- Dental emergencies:
  - Recognize, initiate management, and seek help promptly when/if dental emergencies occur.
  - Refer to an advanced care provider when the case exceeds their skill level.

EPA 11 Document clinical encounters, legal, and financial data.

Addresses CODA Standards: 2-18, 2-19, 2-20, 2-24a, 2-24g

- Document all encounters/communications in compliance with legal, ethical, and professional guidelines.
- Accurately code all clinical activities, taking into account the description of the code, the code requirements, and requirements of a third-party payer.
- Present clear and complete documentation that is readable by other providers, third-party payers, and the patient/patient advocate.

Table 4: Mean/SD for the six items measuring each EPA as a Discrete Unit of Work (Subscale in the EQual rubric)

EPA LIST	**Scale points for the 6 items**					**Range of Mean (SD) across all EPAs**
	1	**2**	**3**	**4**	**5**	
This EPA has a clearly defined beginning and end	Neither the beginning nor the end of the activity is clearly	The beginning OR the end is clearly defined	The beginning and end are both clearly defined			2.00 (.58) to 2.91 (.29)

This article is protected by copyright. All rights reserved.

Author Manuscript

	defined	but not both				
This EPA is independently executable to achieve a defined clinical outcome	Routinely depends on multiple other contributing tasks/activities	Routinely depends on one other contributing task/ activity	Can be independent, but commonly depends on other tasks/activities to achieve its clinical outcome	Typically independent, but infrequently depends on other tasks/activities to achieve its clinical outcome	Independent of other tasks/ activities to achieve its clinical outcome	2.71 (1.37) to 4.23 (1.02)
This EPA is specific and focused	Describes a large, general area of practice or describes domains of competence	Is a general category of work that serves a broad purpose	Is a general category of work that serves a clear and focused purpose	Includes a few closely-related units of work that serve a common, clear and focused purpose	Is specific work that serves a clear and focused purpose	3.08 (1.35) to 4.81 (.40)
This EPA is observable in process	The activity cannot be observed or monitored	Parts of the activity can be monitored, but only indirectly	Some parts of the activity can be directly observed	Most of the activity can be directly observed, but not the entire activity	The activity can be observed in all aspects from beginning to end	3.84 (.80) to 4.95 (.22)
This EPA is measurable	The outcome of	Limited aspects of	The outcome of	The outcome of	The outcome of the	3.88 (.97) to

This article is protected by copyright. All rights reserved.

Author Manuscript

in outcome	the work cannot be described or measured	the outcome can be inferred from indirect assessment but not direct measurement	the work can be inferred, but not directly described or measured	the work can be largely described and/or measured directly	work can be fully described and/or measured directly	4.77 (.53)
This EPA is clearly distinguished from other EPAs in the framework	Cannot be meaningfully distinguished from one or more of the other EPAs	Has clear similarity or overlap with one or more of the other EPAs	Has similarity with other EPAs in the framework, but there are also some clear distinguishing features	Has some similarity with one or more EPAs in the framework, but there are clear and important distinguishing features	Has no apparent overlap with other EPAs in the framework	3.52 (1.12) to 4.67 (.59)

ADEA THE VOICE OF DENTAL EDUCATION

Table 5: Entrustable Professional Activities (EPAs) Glossary

COMPETENCE/COMPETENCY

Competency	A complex behavior or ability of a dental trainee/dentist that is essential to begin independent and unsupervised dental practice. Competency includes knowledge, experience, critical thinking, problem solving, professionalism, ethical values, and procedural skills. These components of

This article is protected by copyright. All rights reserved.

Author Manuscript

	competency become an integrated whole during the delivery of patient care.[1]
Competency-based education	An outcomes-based approach to the design, implementation, assessment, and evaluation of dental education programs that uses the domains of competence. It is an educational approach that allows students to advance based on their ability to master a skill or competency at their own pace, regardless of environment. This method is tailored to meet different learning abilities and can lead to more efficient student outcomes.
Clinical Competence Committee	A group that serves the critically important function of synthesizing multiple quantitative and qualitative assessments regarding an individual trainee's performance.
Domains of competence	Broad areas of competence that describe a competency framework for a profession, such as described in the domains of competence.
Threshold of competence	Earliest stage of development that allows for the entrustment of the dental trainee/dentist
Core Entrustable Professional Activities	Tasks or activities that every learner in a program must master to complete the program with certification. (Term also used for ADEA-proposed EPAs for predoctoral education.)[3]
Entrustable Professional Activity	A unit of professional practice or essential task of a discipline profession, specialty, or subspecialty that a learner can be trusted to perform without direct supervision in a given health care context once sufficient competence has been demonstrated.[4]
Elective EPAs	Optional tasks that may vary among learners and may determine a personal profile at graduation.[5]
Extracurricular EPAs	EPAs that may or may not be added to the set of certified EPAs. They are not required for completion of a program.[5]
Logic of EPAs	The categorization of EPAs used in a framework (procedures, disease-entities, or services/functions), or a combination of the three categories.[6]
Nested EPA	Small unit of professional practice that meets the EPA definition and is also part of a larger

This article is protected by copyright. All rights reserved.

Author Manuscript

	EPA to be entrusted later in training. A nested EPA can be a single unit of work ora part of a group of nested EPAs that form a larger EPA.[7]
Transdisciplinary EPA	Similar EPAs that are applicable in different disciplines or specialties. The EPA may be elaborated, established or identified for a specific professional domain, profession or discipline that is used in one or more other disciplines or professions. It may also be a newly identified broad activity, applicable across several related specialties.[8]

ENTRUSTMENT

Entrust	To confide the care or execution of a task to a person.
Entrustment	The action of entrusting or the fact of being entrusted.
Entrustment decisions	In an educational context, these are decisions to trust a learner with an essential professional responsibility at a specified level of supervision**.**
Ad hoc entrustment decisions	Entrustment decisions that are situated in time and place, based on estimated trustworthiness of the trainee, risk of the situation, urgency of the job to be done, and the suitability of a given task at the moment for a given learner. They do not necessarily constitute a precedent for similar decisions in the future. This is an entrustment decision made based on global integration of core competencies to a specific clinical encounter**.**[9]
A RICH entrustment decision	An entrustment decision regarding the increase of autonomy of a dental trainee that takes into account five evidence-based categories of trainee features. These categories can be summarized with the mnemonic “A RICH”: Agency (proactive toward work, team, safety, and personal development); Reliability (conscientious, predictable, accountable, and responsible); Integrity (truthful, benevolent, and patient-centered); Capability (task-specific knowledge, skills, experience, and situational

This article is protected by copyright. All rights reserved.

Author Manuscript

	awareness); and Humility (recognizes limits, asks for help, and is receptive to feedback).[10]
Formative entrustment decisions	Formative assessment after which the committee evaluates all the assessments to make a decision. It involves multiple assessments with multiple assessors, over time. The cumulative results become a summative decision.[11]
Summative entrustment decisions	Entrustment decisions grounded in sufficient evaluation and made by educational program directors or clinical competency committees, leading to the certification of the trainee to act in the future with a specified level of supervision.[12]
Entrustment readiness	Characterization of the trustworthiness or entrustability required to qualify a learner who passes the threshold of competence for an EPA.[5]
Entrustment and supervision scales	Levels of supervision that reflect increasing degrees of responsibility and entrustment and decreasing supervision (e.g., O-score). Scales denote levels of supervision unique to workplace-based assessments used to document learner progression and guide learner development. The supervision level described in a scaled system (e.g., 1-5) reflects the amount of executive responsibility for a learner's clinical activities that a clinical teacher assumes. Ordinal rating is intended to represent a set of ordered, nested decisions in which permission to act at each increasing level of autonomy (or decreasing level of supervision) is an observable decision that explicitly permits actions at each identified "lower" level gradation.[13]
Milestones	Stages in a learner's development of specific competencies.[14]
Trust	Confidence in or reliance on some quality or attribute of a person or thing. The willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. Trust assumes ability, benevolence, and integrity.
Grounded trust	Trust that is shared among experts and is based on sufficient observation

This article is protected by copyright. All rights reserved.

Author Manuscript

	an essential and usually prolonged experience with the trainee.[15]
Initial trust	Trust based on first impressions. It is sometimes also called "swift trust" or "thin trust".[5.]
Presumptive trust	Trust based solely on credentials (e.g., diplomas, institutions, recommendations), without prior interaction with the trainee.[5]
Prospective and retrospective assessment approaches	Most workplace-based assessments are retrospective. For example, they report what was observed (e.g., "the student did well"). A prospective approach to assessment looks toward the future (e.g., "this student is now [or not yet] ready for indirect supervision").[5]
Self-determination Theory (SDT)	A motivational theory of personality, development, and social processes that examines how social contexts and individual differences facilitate different types of motivation, especially autonomous motivation and controlled motivation. SDT proposes humans have three basic psychological needs: competence, autonomy, and relatedness. Satisfaction of these needs promotes the optimal motivational traits and states of autonomous motivation and intrinsic aspirations, which facilitate psychological health and effective engagement with the world.[16]
Statement of Awarded Responsibility (STAR)	A Statement of Awarded Responsibility results from a summative entrustment decision and is given when a learner has achieved expectations to perform the specific EPA with quality and independence.[5]
Supervision	The provision of guidance and support in learning and working effectively in health care by observing and directing the execution of tasks or activities to ensure that they are done correctly and safely, from a position of being in charge.[5]
Workplace/clinical practice setting	The patient care settings in which much of the learning occurs for professionals.
Workplace curriculum	An organized set of experiences in a workplace

This article is protected by copyright. All rights reserved.

Author Manuscript

setting that fosters the acquisition of competencies necessary to act as a professional. Features that characterize a workplace curriculum include (i) a trajectory of participation from low to high accountability, (ii) access to knowledge that would not be learned by discovery alone, (iii) direct guidance from experts and others who are more experienced, and (iv) indirect guidance provided by the physical and social environment.[18]

Workplace-based assessment — Any type of structured assessment done in the workplace (e.g., mini-clinical exercise or clinical work sampling) intended to create opportunities for structured observation and feedback, and to support the achievement of competency-based learning goals.[19]

REFERENCES

1. ADEA Competencies for the New General Dentist. J Dent Educ. 2017;81(7):844-7. doi: 10.1002/j.0022-0337.2017.81.7. tb06299.x. PMID: 31989605.
2. ten Cate O, Snell L, Carraccio C. Medical competence: The interplay between individual ability and the health care environment, Medical Teacher, 2010;32(8):669-75, doi: 10.3109/0142159X.2010.500897.
3. Arunachalam S, Pau A, Nadarajah VD, Babar MG, Samarasekera DD. Entrustable professional activities in undergraduate dental education: A practical model for development and validation. Eur J Dent Educ. 2023;27(2):332-42. doi: 10.1111/eje.12809. Epub 2022 May 16. PMID: 35484781.
4. ten Cate O. Nuts and bolts of entrustable professional activities. J Grad Med Educ. 2013;5(1):157-8. doi: 10.4300/JGME-D-12-00380.1. PMID: 24404246; PMCID: PMC3613304.
5. EPA Course Guide, Ins And Outs Of Entrustable Professional Activities An International Course On EPAs—An Online Course – January/February 2023
6. Hennus, Marije P., et al. The logic behind entrustable professional activity frameworks: A scoping review of the literature. Medical Education. 2022;56(9):881-91.
7. ten Cate O, Taylor DR. The recommended description of an entrustable professional activity: AMEE Guide No. 140, Medical Teacher. 2021;43(10):1106-14. doi: 10.1080/0142159X.2020.1838465.
8. Pool I, Hofstra S, van der Horst M, ten Cate O. Transdisciplinary entrustable professional activities, Medical Teacher. 2023;45(9):1019-24. doi: 10.1080/0142159X.2023.2170778.
9. ten Cate O. A primer on entrustable professional activities. Korean J Med Educ. 2018;30(1):1-10. doi: 10.3946/kjme.2018.76. Epub 2018 Feb 28. PMID: 29510603; PMCID: PMC5840559.
10. ten Cate O, Chen HC. The ingredients of a rich entrustment decision. Medical Teacher. 2020; 42.12: 1413-1420.
11. Kinnear B, Warm EJ, Caretta-Weyer H, Holmboe ES, Turner DA,van der Vleuten C, Schumacher DJ. Entrustment Unpacked: Aligning Purposes, Stakes, and Processes to

This article is protected by copyright. All rights reserved.

Author Manuscript

Enhance Learner Assessment. Academic Medicine 96(7S):p S56-S63, July 2021. | DOI: 10.1097/ACM.0000000000004108
12. Jeyalingam T, Walsh CM, Tavares W, Mylopoulos M, Hodwitz K, Liu LWC, Heitman SJ, Brydges RA. Variable or Fixed? Exploring Entrustment Decision Making in Workplace- and Simulation-Based Assessments. Academic Medicine, Volume 97, Number 7, 23 June 2022, pp. 1057-1064(8)
13. Schumacher DJ, ten Cate O, Damodaran A, Richardson D, Hamstra SJ, Ross S, Hodgson J, Touchie C, Molgaard L, WGofton W, Carraccio C, and on behalf of the ICBME Collaborators. Clarifying essential terminology in entrustment, Medical Teacher 2021;43(7):737-744, DOI: 10.1080/0142159X.2021.1924365.
14. Hicks PJ, Schumacher DJ, Benson BJ, Burke AE, Englander R, Guralnick S, et al. The pediatrics milestones: conceptual framework, guiding principles, and approach to development. J Grad Med Educ. 2010;2(3):410–418.
15. Peters H, Holzhausen Y, Boscardin C, ten Cate O, Chen H C. Twelve tips for the implementation of EPAs for assessment and entrustment decisions, Medical Teacher, 2017;39(8):802-7. DOI: 10.1080/0142159X.2017.1331031
16. Deci EL, Ryan RM. Self-Determination Theory. International Encyclopedia of the Social & Behavioral Sciences (Second Ed.), 2015, Pages 486-491.
17. ten Cate O, et al. Curriculum development for the workplace using entrustable professional activities (EPAs): AMEE guide no. 99. Medical Teacher. 2015;37(11)983-1002.
18. Billett S. Learning through work: Workplace affordances and individual engagement. J Workplace Learning. 2001;13(5):209-14.
19. Pinilla S, Kyrou A, Klöppel S, Strik W, Nissen C, Huwendiek S. Workplace-based assessments of entrustable professional activities in a psychiatry core clerkship: an observational study. BMC Med Educ. 2021 Apr 21;21(1):223. doi: 10.1186/s12909-021-02637-4. PMID: 33882926; PMCID: PMC8059233.

APPENDIX A

Please note institutions listed for any member for the following groups may have changed.

I. ADEA Compendium of Clinical Competency Assessment (ADEA Compendium) Workgroup members:

Chair: Steven Friedrichsen (Western University)
Members:
R. Lamont "Monty" MacNeil (University of Connecticut)
Cecile Feldman (Rutgers University)
Ellen Byrne (Virginia Commonwealth University)
Nicole Kimmes (University of New England)
Timothy Treat (Indiana University) **
Kim Fenesy (Rutgers University)
Anne Wetmore (Eastern Washington University)
Janet Kinney (University of Michigan)
David Lazarchek (Western University)

This article is protected by copyright. All rights reserved.

Author Manuscript

Staff:
Denice Stewart (ADEA Senior Scholar-in-Residence) **

II. ADEA Compendium EPA Workgroup members (Before downsizing):

Chair: Carol Anne Murdoch-Kinch (Indiana University)

Members:
Elizabeth Andrews (Western University)
Hubert Chan (Western University)
Theodora Danciu (University of Michigan)
Tracy De Peralta (University of Colorado)
Mark Fitzgerald (University of Michigan)
Steven Friedrichsen (Western University) **
Carlos Gonzalez-Cabezas (University of Michigan)
Sara Gordon (University of Washington)
Sharon Gordon (University of Kansas City)
Erinne Kennedy (University of Kansas City)
Phil Marucha (Oregon Health & Science University)
Linda Niessen (University of Kansas City)
Vidya Ramaswamy (University of Michigan)
Laura Romito (Indiana University)
Rocio Quinonez (University of North Carolina)
Ashley Tittemore (University of North Carolina)
Timothy Treat (Indiana University) **
Michael Wolcott (Highpoint University)
David Zahl (Indiana University)
Staff:
Denice Stewart (ADEA Senior Scholar-in-Residence)**
Sheila Brear (ADEA Chief Learning Officer)
***served on both committees*

III. ADEA Compendium EPA Workgroup members May-June 2023 to present

Co-Chairs:
Rocio Quinonez, Co-Chair (University of North Carolina)
Phil Marucha, Co-Chair (Oregon Health & Science University)
Members:
Theodora Danciu (University of Michigan)
Erinne Kennedy (University of Kansas City)
Vidya Ramaswamy (University of Michigan)
Laura Romito (Indiana University)
Denice Stewart (ADEA Consultant and University of North Carolina)
Michael Wolcott (Highpoint University)
Staff:
Sheila Brear (ADEA Chief Learning Officer)
Gulsun Gul (ADEA Chief of Innovation, Clinical Education & Public Health)

This article is protected by copyright. All rights reserved.