


ORIGINAL ARTICLE

Entrustable professional activities framework for assessment of patient handoffs in dentistry

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Abstract

Purpose/Objectives: The aim of this study is to report data on the lack of a proper patient handoff system in dentistry and dental education and to present a possible solution to integrate this into curriculum using the “entrustable professional activities” (EPAs) framework.

Methods: Delphi participants from seven US dental schools provided feedback on a preliminary definition of handoff, a mnemonic and an assessment rubric. 2019 American Dental Education Association Commission on Change and Innovation in Dental Education (ADEA CCI) participants further evaluated the hand-off EPA using the EQual rubric for EPA quality and structure.

Results: Delphi participants identified points of transition in dentistry, selected the D-PASS as a mnemonic, and agreed with the evaluation rubric. The ADEA CCI participants agreed the handoff EPA describes work that is essential for the profession and suitable for entrustment.

Conclusion: The D-PASS rubric is an effective way to assess patient handoffs.

KEYWORDS

assessment rubric, entrustable professional activities, EPAs, handoff, mnemonic, transition of care

1 | INTRODUCTION

The Joint Commission, the US accrediting body for health-care organizations and programs, defines handoff as a

“transfer and acceptance of patient care responsibility achieved through effective communication. It is a real-time process of passing patient-specific information from one caregiver to another or from one team of caregivers

to another for the purpose of ensuring the continuity and safety of the patient's care."¹ In dentistry, although the Commission on Dental Accreditation specifies referrals, it does not specifically indicate a handoff process. This contrasts with published data on handoffs in dentistry where an overwhelming proportion of dental school faculty believe that this process is important to teach and assess.² Most pre- and post-doctoral dental programs do not have a system in place to holistically assess whether students or residents possess the prerequisite knowledge, skills, and attitude to perform an effective handoff in the clinical setting. An effective patient handoff process is an essential activity for health care providers to ensure patient safety.³⁻⁵ According to The Joint Commission, communication breakdowns are estimated to contribute to 80% of medical errors,⁶ which lead to a variety of consequences, including mortality.

Entrustable professional activities (EPAs) are a way to bridge the gap between well-defined competencies and clinical practice.^{7,8} EPAs are units of professional practice that constitute the daily services provided by clinicians. While competencies describe people, EPAs describe tasks that define a profession and thereby bring the patient into the assessment equation. Although many post-graduate medical programs and several undergraduate medical programs worldwide are redesigning education and assessment procedures to incorporate EPAs in clinical training, dentistry has only recently begun to explore EPAs.^{2,9} Patient handoff has been identified as a core EPA that every graduating medical student should be expected to perform proficiently, without direct supervision, on day 1 of residency, regardless of chosen specialty.¹⁰ Medicine has laid the groundwork for patient handoff models in dentistry. In medicine, handoffs occur in multiple settings and among various providers, including either in-house or on-call coverage for hospitalized patients. Internal medicine and pediatric medicine, among others, are residency programs that use the EPA framework for patient handoffs.¹¹ For predoctoral dental education, a handoff/transition-of-care EPA, was identified at a level of "must be able to do" by approximately 80% of faculty and at a level of "should be able to do" by approximately 20% of faculty in a survey of 68 respondents at a US dental school.²

Successful handoff improvement programs include the illness severity, patient summary, action list, situation awareness and contingency planning, and synthesis by receiver (I-PASS) program that bundles together three elements: team training, implementation of a standardized template for the written document, and a verbal mnemonic.¹² The I-PASS Program has been implemented in 10 pediatric institutions.^{13,14} The Joint Commission created the National Patient Safety Goal 2E in 2006 "implement a standardized approach to 'hand off' com-

munications, including an opportunity to ask and respond to questions." The use of mnemonics has facilitated the standardization of this process and aids in memorization of steps in activities. A systematic review of published handoff mnemonics identified 46 articles describing 24 different handoff mnemonics¹⁵; more recently, the I-PASS mnemonic has been developed for medical handoffs.¹² I-PASS Program can serve as an example for the development of an assessment rubric for dentistry due, in part, to the following: (1) the I-PASS handoff program was designed by experts in patient safety, medical education, health services research, and patient care from multiple institutions in the United States and Canada, (2) this program, implemented in nine hospitals, resulted in a 30% reduction in injuries due to medical errors, and (3) the availability of extensive I-PASS training materials.¹⁶

The aim of this study is to report data on the lack of a proper patient handoff system in dentistry and dental education and to present a possible solution to integrate this into curriculum using the "EPA" framework.

2 | METHODS

This study received a notice of exemption (HUM00132427) from the University of Michigan School of Dentistry institutional research regulating body.

2.1 | Initial feedback from American Dental Education Association 2017 workshop

Findings from a 24-instrument survey on interdisciplinary education in US dental residency programs revealed that IDE lacks specific competencies and assessment strategies.¹⁷ Based on these findings, an EPA-based framework for dental graduate programs was presented at the 2017 American Dental Education Association (ADEA) Annual Session as a seminar. A pilot rubric for handoff evaluation based on a study by Aylward et al.¹¹ was discussed. Based on the group's interest in an IDE EPA in patient handoff, the current research group pursued this further.

2.2 | Delphi expert panel round I

The pilot handoff EPA for dentistry project was shared with seven multi-site experts who provided qualitative feedback. These experts consisted of volunteers from the 2017 ADEA Annual Session and targeted recruitment of Program Directors and Deans who are directly involved

in curriculum development of a graduate dental program. The seven experts performed the following tasks: (1) defined handoff in dentistry and decided on a term to describe transition of care, (2) identified points of handoff in dentistry, (3) identified a dentistry-centric mnemonic, and (4) designed a dentistry-centric assessment rubric.

2.3 | Delphi expert panel round II

The Delphi panel was expanded to four additional members representing three different institutions for a total of 11 participants excluding the original principal investigators in this study (TD, ID, NK, and VR). The participants were asked to indicate their preference for the term to describe the process and were given two choices: “handoff” and “transition of care.” They were also presented with the following definition of handoff/transition of care and made suggestions for modifications or edits:

“Handoff/transition of care is defined as the process of sharing patient care or transferring primary authority and responsibility of clinical care from one clinician to another. This definition was modified for dentistry to encompass referrals between dentists and dental specialists, complete transfer of care as occurs when a dentist retires or a patient moves, and sharing patients as occurs during interdisciplinary (between different dental specialties) or interprofessional care.”

The respondents were then asked to select one of the three mnemonic terms as their preferred description of handoff/transition of care (D-PASS, BRAIN, and DENT SAFE). The D-PASS mnemonic mirrored closely the medical handoff mnemonic I-PASS.¹²

The definitions for the dental mnemonics included are as follows:

D-PASS: dental treatment phase, patient summary including chief concern, action list, situation awareness and contingency plans, synthesis by receiver.

BRAIN: Background, review diagnosis/treatment plan, assess progress, investigate limiting factors that affect treatment outcomes, next steps – formulate an action plan.

DENT-SAFE: Demographics, existing diagnosis, next steps, treatment plan, situational awareness and contingency plan, administrative details, follow up, and exit summary.

Respondents were asked if their programs had a handoff/transition of care process and if their program had a formal training and assessment for this. Participants were also asked if their program had an assessment for hand-

off/transition of care proficiency and asked them to rate how important this was in patient care and in their curriculum.

2.4 | Feedback from the 2019 ADEA Commission on Change and Innovation meeting

The 2019 ADEA Commission on Change and Innovation (CCI) meeting focused on the future of dental education and its relationship to overall health. The participants included leaders in dental education representing the majority of US academic institutions. The speakers were experts in education from several US dental schools sharing their new ideas and programs, effective practices and lessons learned. Two days were allocated to presentations and group activities focusing on EPAs. We asked the session participants to evaluate the proposed handoff EPA and to determine if it is an essential task of the dental profession. Participants ($n = 27$) responded to a survey based on the EQual rubric developed by a team of education scholars with expertise in EPAs.¹⁸ The rubric provides a way to assess any EPA with respect to three criteria domains: EPAs as a discrete unit of work (six items), EPAs as entrustable, essential, and important tasks of the profession (four items), and EPAs curricular role (four items). The survey has good reliability and can identify EPAs requiring revision as shown in its pilot use with residency program directors and nonclinical staff.

3 | RESULTS

3.1 | Initial feedback from ADEA 2017 workshop

After evaluation of potential EPAs for interdisciplinary graduate dental education, the consensus of the group participants ($n = 14$) at the 2017 ADEA Annual Session was that development of an EPA on patient handoff should receive high priority. Group participants, which included program directors, identified several advantages of properly executed handoffs including improved patient treatment outcomes, reduction in treatment length, enhancement of communication skills between team members, and enhanced learning. The participants indicated that a patient handoff between team members, representing the same specialty as well as between team members of different disciplines, should be an essential component of dental graduate education. The participants indicated that good handoffs ensure continuity of treatment and optimal patient outcome.

TABLE 1 Specifics of panel composition and comments for the round I of the handoff Delphi study

Phase 1	
Participant institutions (number of participants)	University of Alabama School of Dentistry ($n = 1$), Midwestern University College of Dental Medicine ($n = 1$), Nova Southeastern College of Dental Medicine ($n = 1$), New York University College of Dentistry ($n = 1$), The Ohio State University College of Dentistry ($n = 1$), Tufts University School of Dental Medicine ($n = 1$), University of Michigan School of Dentistry ($n = 1$)
Define handoff in dentistry and decide on term to describe the process	Handoff makes sense; however if repeated to a patient for some reason, sounds cold transition of patient care or transition of care is better. I think keep “handoff” for simplicity...but it has subgroups (like total transfer, limited procedure transfer, limited timespan transfer...etc.).
Identify points of handoff in dentistry	<p><u>During training:</u></p> <ul style="list-style-type: none"> • Between same-year (D3/D3 and D4/D4) dental students for the purpose of completing requirements. • Graduating student/resident to other student/resident. • Fourth year student prior to community-based rotations, to 3rd year student. • Predoctoral to post-doctoral clinics (and vice versa). <p><u>After graduation:</u></p> <ul style="list-style-type: none"> • Private practice – referral for partial care or full referral of case. • Pediatric dentist to general dentist. • Dentist retires or patient moves. • Hospital dentistry to general dentist (post-chemoradiation for oral squamous cell carcinoma, for example). • Transfers within institutions: advanced education (specialty) programs. • Community health centers.
Identify dentistry-centric mnemonic	<p>(Using) “PASS” somehow so that our students are calibrated with the medical community.</p> <ul style="list-style-type: none"> • D-PASS: Dental treatment phase (vs. illness severity from medicine), patient summary, action list, situation awareness, and contingency plan, synthesis by receiver. • BRAIN: Background, review diagnosis/treatment plan, assess progress, investigate limiting factors that affect treatment outcomes, next steps—formulate an action plan. • DENT SAFE: Demographics, existing diagnosis, next steps, treatment plan, situational awareness and contingency plan, administrative details, follow-up, exit summary.
Identify assessment rubric	<p>It might be helpful if the content of the rubric fit into already established rubrics per institution so the students are working with rubrics they are familiar with. This would also make it easy for the rubric to fit into an established software system.</p> <p>If this rubric was shown to students as the expectation, I believe it would be adopted rapidly. By using this as a guide, the students made communications clear, concise; plus it conveys professionalism and competency. What student does not want to look smart and what professor does not want their students to excel?</p>
General comments	<p>The concept is important and has the potential to positively impact care. As we plan, we have to consider all the end users, private practices to hospital dentistry to academic programs. We have to “build” and concisely convey the relevance of “handoffs” and compelling reasons why it should be adopted.</p> <p>The handoff conversation (verbal and written) should be part of the requirements for graduation.</p>

Based on the group’s input, the definition for handoff was modified as follows for dentistry: “Handoff/transition of care is defined as the process of sharing patient care or transferring primary authority and responsibility of clinical care from one clinician to another. For dentistry, this process encompasses referrals between dentists and dental specialists, complete transfer of care as occurs when a dentist retires or a patient moves, and sharing patients as

occurs during interdisciplinary (between different dental specialties) or interprofessional care.”

3.2 | Delphi expert panel round I

The final panel composition is indicated in Table 1. The core team (TD, ID, NK, and VR) asked the Delphi

participants to comment on various aspects related to handoffs. The data are presented in Table 1. Participants were provided, from medicine, the definition of handoff,¹ the I-PASS mnemonic,¹² and the assessment rubric¹¹ as materials for evaluation.

3.3 | Delphi expert panel round II

For round II of the Delphi process, the team of respondents was expanded with representation from University of Detroit Mercy School of Dentistry ($n = 1$), University of Michigan School of Dentistry ($n = 2$), and Texas A&M College of Dentistry ($n = 1$). In response to a survey, five of the six participants preferred the term “transition of care” to “handoff.” The only suggestion made to the definition provided was removing “sharing patient care” as this was seen as different from transitioning care. This suggestion was addressed and integrated as follows:

“Handoff transition of care is defined as the process of sharing patient care or transferring primary authority and responsibility of clinical care from one clinician to another. For dentistry, this process encompasses referrals between dentists, dental specialists, and other health care providers as well as the complete transfer of care as occurs when a dentist retires or a patient moves.”

The preferred mnemonic for the handoff process was D-PASS ($n = 3$, 50%), followed by DENT-SAFE ($n = 2$, 33%), and one-person preferred BRAIN. Only two participants (33%) said they had a system for handoff/transition of care in their program, and only one person indicated their program included formal training in handoff/transition of care.

3.4 | Feedback from the 2019 ADEA CCI meeting

The final evaluation of the handoff as an EPA for dentistry was at the 2019 ADEA Commission on Change and Innovation in Dental Education Summer Meeting where participants were asked to comment on the handoff EPA using the EQual rubric.¹⁸ The response rate was low, with 27 of the 91 respondents (30% response rate) answering the survey across all questions.

The results are presented in Table 2. Of note, an overwhelming majority of participants agreed with the statement: “This EPA addresses professional work that is suitable for entrustment.” In fact, across the domains of the handoff EPA being an entrustable, essential, and important task of the profession and the inclusion of this EPA in the curriculum, respondents agreed with the statements. In the category of the handoff EPA being a discrete unit

of work, some respondents felt this EPA is not specific or focused and is not independently executable to achieve a defined clinical outcome (“1” = “low”, 15% for both statements).

D-PASS Assessment Rubric:

Once the D-PASS mnemonic was selected to represent the handoff process in dentistry, the research team designed an assessment rubric based on this mnemonic and mirroring the study of Aylward et al.¹¹ The D-PASS mnemonic and examples are provided in Table 3. The categories for the assessment rubric are based on the EPA assessment framework and allow supervising clinicians to determine if the learner is ready for unsupervised practice for this EPA. The behavioral descriptors proposed for handoff by Aylward et al.¹¹ were added first and modified to correspond to the D-PASS category.

The proposal to evaluate learners for entrustability along the D-PASS mnemonic is below:

- **D:** dental treatment phase—determine if learner can identify correctly the dental treatment phase, the patient is in and rationalize his/her choice.
- **P:** patient summary—determine if learner stated the patient’s chief concern and provided an accurate, synthesized, and succinct dental, medical, social histories and medications.
- **A:** action list—determine if learner created a complete action list that is prioritized, clear, concise, and accurate.
- **S:** situational awareness and contingency plans—determine if learner identified contingency plans with prioritized and optimal “if-then” situations.
- **S:** synthesis by receiver—this refers to ability of person giving the handoff to engage receiver in the process and to anticipate questions in an open and non-self-defensive manner.
- Based on the experience of the current research team, it is essential for learners to be evaluated in a “time and environment” category as proposed by Aylward et al.¹¹
- **T:** time management—determine if learner completed the handoff process in an effective timeframe and managed distractions effectively.

A generic entrustment-based supervision scale consists of the following¹⁹: 1. Cannot perform (presence allowed but no permission to enact EPA), 2. Can perform under direct (proactive) supervision, 3. Can perform with indirect (reactive) supervision, 4. Can perform independently (distant oversight), and 5. May provide supervision to junior learners for this EPA. Such scales guide teacher interventions, provide a framework for feedback and help trainees set learning goals. Unsupervised practice (level 4) is the target at graduation, and, therefore, we used a 1–4 scaled for predoctoral dental education.

TABLE 2 EPA survey: Handoff/Transition of patient care, ADEA CCI 2019

Please evaluate this entrustable professional activity (EPA) as it relates to handoff/transition of care.
Definition: Handoff/transition of care is defined as the process of sharing patient care or transferring primary authority and responsibility of clinical care from one clinician to another. For dentistry, this process encompasses referrals between dentists, dental specialists, and other health care providers as well as the complete transfer of care as occurs when a dentist retires, or a patient moves. (n = 27/ 91, 30% response rate)

	Low (1)	2	3	4	High (5)	Not answered	Mean (SD)
EPAs as discrete units of work							
This EPA has a clearly defined beginning.	2 (7%)	0	2 (7%)	3(11%)	20 (74%)	0	4.44 (1.13)
This EPA is independently executable to achieve a defined clinical outcome.	4 (15%)	3(11%)	7 (26%)	8 (30%)	5 (19%)	0	3.26 (1.29)
This EPA is specific and focused.	4 (15%)	2 (7%)	5 (19%)	9 (33%)	6 (22%)	1 (4%)	3.42 (1.34)
This EPA is observable process.	0	2 (7%)	4 (15%)	12 (44%)	9 (33%)	0	4.04 (.88)
This EPA is measurable in outcome.	0	2 (7%)	2 (7%)	17 (63%)	5 (19%)	1 (4%)	3.96 (.76)
This EPA is clearly distinguished from other EPAs in the framework.	0	0	4 (15%)	10 (37%)	9 (33%)	4 (15%)	4.22 (.72)
EPAs as entrustable, essential, and important tasks of the profession							
This EPA describes work that is essential and important to the profession.	0	0	5 (19%)	10 (37%)	11 (41%)	1(4%)	4.23 (.75)
Performing this EPA leads to recognized output or outcome of labor.	0	0	4 (15%)	13	9 (33%)	1(4%)	4.19(.68)
The performance of this EPA in clinical practice is restricted to qualified personnel.	0	3 (11%)	11 (41%)	6 (22%)	6 (22%)	1(4%)	3.58 (.97)
This EPA addresses professional work that is suitable for entrustment.	0	0	0	7 (26%)	19 (70%)	1(4%)	4.73 (.44)
EPAs Curricular Role							
This EPA requires the application of knowledge, skills, and/or attitudes (KSAs) acquired through training.	0	1 (4%)	0	12 (44%)	8 (30%)	6 (22%)	4.29(.70)
This EPA involves application and integration of multiple domains of competence.	0	1 (4%)	0	4 (15%)	16 (59%)	6 (22%)	4.67 (.71)
The EPA title describes a task, not qualities or competencies of a learner.	0	1 (4%)	1 (4%)	14 (52%)	4 (15%)	7 (26%)	4.05 (.67)
This EPA describes a task and avoids adjectives (or adverbs) that refer to proficiency.	0	4 (15%)	1 (4%)	6 (22%)	10 (37%)	6 (22%)	4.05 (1.13)

The 5th level on this scale of providing supervision to junior learners for this EPA was not included, although may be considered for trainees in post-doctoral programs providing clinical oversight for predoctoral students.

This evaluation rubric is presented in Figure 1.

4 | DISCUSSION

The purpose of our study was to present a dentistry-centric definition for the transition of care/handoff process, a definition tool (mnemonic) to assist students, and a rubric for assessment based on the EPAs framework. This work represents the input of experts in dental education obtained from a workshop at an annual ADEA meeting, through a

Delphi process and through a survey administered at an ADEA CCI meeting. The team of experts represents various US dental institutions and identified gaps in transition of care protocols as a major reason for decreased patient satisfaction and quality of care.

The value of handoffs is best summarized in this quote from one of the participants: “The handoff conversation (verbal and written) should be part of the requirements for graduation.” However, both recorded and anecdotal data suggest a need for a clearly defined handoff process including assessment.

At the 2017 ADEA annual session and exhibition, workshop participants indicated that the development of a clearly defined handoff process for dentistry should receive high priority for patient care and student

TABLE 3 Mnemonic for D-PASS with clarifications

Letter	What it stands for	Explanation
D	Dental treatment phase	<p>Gender/age of patient/Treatment phase: select one of the following</p> <ul style="list-style-type: none"> • Systemic phase • Acute phase • Disease control phase • Definitive treatment phase • Maintenance phase <p>Example: <i>AJ is a 50-year-old male in the definitive treatment phase.</i> Ref: Diagnosis and treatment planning in dentistry, 3rd edition by Stephen J. Stefanac and Samuel P. Nesbit. Elsevier, Inc. 2017.</p>
P	Patient summary including CC	<p>Chief concern, dental history, medical history, medications, social history</p> <p>Example: <i>AJ presented to the School of Dentistry 1 year ago with a chief concern of “I would like to be able to chew on my back teeth.” At his initial appointment, we identified numerous carious lesions, multiple missing teeth, periodontitis grade C, and two periapical radiolucencies associated with non-vital teeth. A comprehensive treatment plan was designed with permission to make monthly payments. Systemic and acute phases were completed. I was able to place porcelain fused to metal crowns on three of four abutment teeth. His medical history is significant for elevated blood pressure and cholesterol which he controls with Lisinopril and Lipitor, respectively. Last appointment with primary care physician was 1 month ago. His blood pressure is well-controlled.</i></p> <p><i>Patient has been smoking one pack of cigarettes per day for the past 20 years. He is ready to quit and expressed interest in helping us do so.</i></p> <p>This is also the place to mention if:</p> <ul style="list-style-type: none"> • a medical consult was obtained and where the information is located. • we are monitoring pathology (soft and hard tissue); such an example may be radiographic lesions consistent with periapical cemento- osseous dysplasia. • referral to oral surgery for biopsy was initiated.
A	Action list and patient preference	<p>List here what will be done and in what order.</p> <p>Indicate in this section, patient preference regarding appointment time, contact, language, preferred pronouns.</p> <p>Example: <i>Follow treatment plan: 1. address smoking cessation, 2. #29 PFM crown, note RPD design in treatment plan, 3. RPD: maxilla and mandible, 4. SC/RP every 3 months.</i></p> <p><i>The patient prefers afternoon appointments as he has to travel 1.5 h to get to our clinic; best way to contact the patient is using his cell phone number. You can also leave a message for him on his home phone.</i></p>
S	Situation awareness and contingency planning	<p>Describe here situations that may change the treatment plan. For example, identify teeth with guarded prognosis. Provide guidance for anticipated changes (“if/then” statements).</p> <p>Example: <i>Teeth # 23–26 have moderate periodontal bone loss and 1+ mobility. Patient informed of this but elected to keep teeth. Teeth #12 and 13 have pocket depths of 5 which have stabilized following SC/RP; we discussed with the patient the possibility of periodontal surgery.</i></p> <p>This section should also include financial planning, patient traveling for winter and needing to delay treatment, patient starting chemotherapy for neoplasia (and other possible changes in medical history, for example, hip replacement, cardiovascular stent placement).</p> <p>This is a place to discuss pathology that is being monitored in patient summary—this may include, for example, thin leukoplakia. Details here should be specific—what do you expect at next visit (what are you watching for) and clear “if/then” plan.</p>
S	Synthesis by receiver	<p>The person receiving the handoff has the opportunity to ask questions, clarify information, and to summarize “next steps.”</p> <p>The evaluation can focus on the student providing the handoff: Was he/she able to answer questions? Did he/she engage the receiver in the process? Please see Figure 1 for additional information.</p>

learning. This input resulted in our research team defining the project and obtaining funding through an ADEA Council of Faculties grant. We then solicited the input of dental educators through a Delphi panel. This panel and our research team provided a definition for handoff

in dentistry to include patient referrals and determined that a suitable mnemonic for this process should mirror the mnemonic used in medical handoffs. We identified a suitable assessment rubric and modified it for dentistry. Finally, this framework was presented at the ADEA CCI



Overall assessment	1. Cannot perform	2. Can perform under direct supervision	3. Can perform with indirect supervision	4. Can perform independently
Dental treatment phase(D)	Could not identify the dental treatment phase or identified it incorrectly	Identified dental treatment phase correctly but could not rationalize choice	Identified dental treatment phase correctly and rationalized choice	
Patient summary (P)	Omitted relevant information from medical and/or dental history, treatment received so far	Communicated information about patient but it was not succinct, abstracted, or synthesized. Communicated treatment plan. Provided a brief but complete and relevant medical history. Addressed risk factors.	Gave an accurate, synthesized and succinct statement including name, chief concern, etc. Communicated treatment plan and anticipated challenges/possible complications including those due to changes in medical status.	In addition to discussing treatment plan, was able to prioritize minor and major anticipated challenges including those in patient's medical status.
Action list (A)	Did not create a "to do list"	Created an incomplete "to do list" and did not prioritize. Medical concerns including medical consult, if indicated, were not completely addressed.	Complete "to do list" that is prioritized, minor edits. Plans in place for dental and relevant medical concerns.	Complete "to do" list that is prioritized: clear, concise, accurate
Situational awareness and contingency plans (S)	No contingency plans	No priority of "if-then" statements	Contingency plan with prioritized but not optimal "if-then" situation	Contingency plan with prioritized, optimal "if-then" situation
Synthesis by receiver (S)	Did not engage others in transition process	Provided information but was unable to answer all questions	Provided information; if unable to answer questions, provided a plan for follow-up	Engaged receiver and anticipated questions in an open and non-self defensive way
Manage time and environment	Time not appropriate, easily distracted, not able to complete handoff	Completed handoff but minimally managed time or distractions	Effectively managed time and distractions	

FIGURE 1 Proposed evaluation rubric for dental transition of care/handoff process

meeting where experts in dental education provided additional input. The respondents at the CCI meeting overwhelmingly agreed that handoff describes work that is essential and important for dentistry; our study represents an initial step toward a standardized dentistry-centric transition of patient care process.

In addition to being essential for patient-centric care, handoffs can be ideal platforms for student learning because they provide participants with cycles of action, reflection, planning, and adaptation.²⁰ The extent to which this occurs depends, in part, on patient complexity, resident knowledge, and available time. Such a process could present opportunities to identify and address sub-optimal patient management. This process also emphasizes communication and professionalism; for example, how does a person receiving a handoff ask a critical question without an implied accusation of poor judgment on the part of the person providing the handoff.

As dentistry considers the EPAs as a framework for assessment, the current manuscript followed the process for handoff EPA development and evaluation in medicine, by describing the use of a reliable tool, the EQual rubric, and evaluating dental handoff EPA quality.¹⁸ At the 2019 ADEA CCI meeting where our team and other colleagues introduced EPAs for dental education, the handoff EPA was identified as a discrete unit of work that is entrustable, essential, and important for dentistry. In addition, the participants agreed that the handoff process requires the

application of knowledge, skills, and attitude that are acquired. Subsequent to the ADEA CCI meeting where these data were collected, Wolcott et al.² described an EPA study at the UNC Adams School of Dentistry, University of North Carolina at Chapel Hill. In that study, 100% (68/68) of UNC dental faculty members who evaluated a handoff EPA for dentistry indicated a handoff is expected of a dentist. These results clearly support the implementation of a handoff EPA in dental education.

The current study proposes the use of D-PASS as a mnemonic for the handoff process, mirroring the I-PASS mnemonic used in medicine. Structured communication, with the aid of a mnemonic during transitions in care, is essential to promote patient safety. This study used the I-PASS mnemonic as a reference due to published studies suggesting that the I-PASS handoff system increases efficiency, decreases time during handoffs, and decreases medical errors by 23% and "near misses" by 30%.²¹ One of the Delphi participants in the current study suggested considering different mnemonics "(using) PASS somewhat so that our students are calibrated with the medical community" (Table 1). Including the dental treatment phase for D was a recommendation from the current research team as this is essential when patients are assigned to incoming providers or referred to specialists. Further studies are needed to determine if this handoff process mnemonic improves patient outcomes in a dental education setting.

As a trust-based assessment rubric for handoffs, this study used the D-PASS mnemonic with the rubric proposed by Aylward et al.¹¹ This handoff assessment includes behavioral descriptors to be selected by the observing faculty; these descriptors are developmental in nature and allow observers to provide specific feedback to the learners. This formative feedback may serve as a roadmap for the learner—multiple observations from different faculty members can then be used for a summative entrustment decision. Expanding D-PASS to include “T” for managing time and environment, simplifies the process of assessment for the learners and evaluators. This program is currently in the pilot phase at the University Michigan School of Dentistry; however, our goal is to pilot it at different institutions and obtain data to inform future directions.

As with all innovations in dental education, proposing the EPA framework for assessment will require significant faculty development. The current study started with a clinical skill that is important to the development of the learners as dentists and integral to optimal patient outcome. This will help to facilitate buy-in and overcome barriers to teaching and evaluating handoffs. One significant barrier that must be overcome is that of creating a fixed time and place for handoffs to occur.

This study has a number of limitations. First, the ADEA CCI participants who responded to the survey may have been more familiar with the topic or had more interest in it thus influencing the results. This is a limitation of all survey results in general and should be considered. However, the handoff data presented in this study come from several sources besides surveys. Second, a 30% response rate from the ADEA CCI participants is not sufficient to generalize the handoff EPA results to the non-responders. However, these results combined with data from another dental EPA study from a US institution² clearly indicate a handoff process is an expected activity of a dentist and is a professional activity that a learner can be entrusted with. Last, as is the case with all surveys, the ADEA CCI questions were limited in number and focused entirely on handoffs as an EPA for dentistry. It would have been informative to know, for example, the experience of this group with the handoff process at their own institutions.

5 | CONCLUSION

In conclusion, the DPASS rubric and the associated mnemonic could be of significant value to students in teaching them about handoffs and consequently executing more compassionate and patient centric handoffs. This study demonstrated the value of the EPA framework in the assessment of handoff as an activity that graduating students need to perform. Future use of the DPASS in other

settings that also assess patient outcomes can validate it further.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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