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Abstract

Problem

Trauma-informed care (TIC) provides a medical framework for addressing and mitigating the negative consequences of trauma. In response to student and faculty advocacy, medical schools are developing trauma-informed curricular content. However, medical education literature does not present a comprehensive assessment rubric to evaluate medical students' acquisition of trauma-informed clinical skills.

Approach

A committee of medical students, trainees, and faculty developed a longitudinal TIC curricular theme at Harvard Medical School (HMS). Guided by the National Collaborative on Trauma-Informed Health Care Education and Research competencies, the committee created a set of medical student TIC competencies from July to December 2019. From November 2021 to November 2022, 3 committee subgroups generated new TIC descriptors for each HMS entrustable professional activity (EPA), then circulated these to other subgroups, external experts, and stakeholders for review and feedback. From April to June 2023, the committee iteratively reviewed the materials until reaching consensus for content and pedagogy. The committee integrated TIC content into HMS's existing EPAs expected of students, provided anchoring descriptions of each level, and achieved consensus using a process of iterative review with TIC content experts.

Outcomes

The committee identified 10 TIC competencies and revised all 13 general HMS EPAs to include specific items based on these competencies. The committee incorporated at least 1 trauma-informed competency into each HMS EPA.

Next Steps

This novel set of HMS EPAs provides a framework for assessment of TIC clinical skills. Faculty will be trained to correctly and reliably incorporate TIC competencies into patient care and to use the TIC-inclusive EPAs for student assessment, ensuring that TIC is standard medical practice at HMS. This work may facilitate the adoption of trauma-inclusive EPAs by other institutions to educate the next generation of physicians to practice TIC and thus promote a more accessible, safe, and equitable health care system.

Problem

Approximately 90% of adults in the United States report at least 1 traumatic event in their lifetime.[1] Traumatic events include events causing physical or mental injury, those perceived as potentially life-threatening or extraordinarily stressful, or repeated or extreme exposure to details of such traumatic events. Trauma disproportionately affects marginalized populations who already face increased barriers to accessing health care. Trauma may result in long-term negative health outcomes, especially when experienced during childhood (i.e., adverse childhood experiences).[2]

Trauma-informed care (TIC) provides a framework for health care clinicians and institutions to mitigate the negative consequences of trauma. A trauma-informed approach acknowledges patients' experiences of individual, interpersonal, collective, and structural trauma.[3] Trauma-informed care promotes healing from trauma-related symptoms by interrupting cycles of patient-physician mistrust, enhancing patient-physician collaboration, and increasing patient and physician engagement with the health care system. To develop a trauma-informed health care culture that improves patient care and physician well-being, future physicians must receive effective training in TIC.

Medical students and faculty have advocated for inclusion of trauma-informed curricular content and creation of trauma-informed clinical learning environments.[4] In response, medical schools, including Harvard Medical School (HMS), have started to incorporate TIC into their curricula.[5] To guide TIC curriculum development, the National Collaborative on Trauma-

Informed Health Care Education and Research (TIHCER) developed TIC competencies for undergraduate medical education (UME).[6] At HMS, the TIC Curricular Theme Committee adapted these competencies for use in a longitudinal TIC curriculum. Trauma-informed care content, designed to help students achieve these competencies, is now included in required courses and clerkships during years 1 to 2 and in elective courses and clerkships during years 3 to 4.

Medical schools need standardized assessment of students' TIC clinical skills to evaluate the effectiveness of TIC curricular innovations and enable developmentally appropriate formative and summative assessment. Although TIC competencies are useful for guiding curricular design, they do not provide clear observable criteria for assessment of skills and are not specific to a medical student's level. In our literature search, we did not identify any comprehensive TIC clinical skills assessment rubrics in UME. Most published TIC assessment strategies focus on residents and primary care practitioners and/or enable assessment of discrete skills (e.g., trauma inquiry, trauma-informed physical exam) rather than holistic trauma-informed clinical skills.

The Association of American Medical Colleges (AAMC) adopted the core entrustable professional activities (EPAs) for entering residency as observable and measurable units of professional practice (i.e., skills expected of all medical school students at the time of graduation).[7] Entrustable professional activities enable UME level–appropriate assessment of medical students. Harvard Medical School assesses students using 13 HMS EPAs, adapted from

the AAMC core EPAs, requiring students to demonstrate entrustability to perform each EPA without direct supervision by graduation. Core faculty observers determine entrustability using an HMS EPA checklist during simulated patient encounters (objective structured clinical examinations [OSCEs]) and in clinical settings. Trauma-informed EPAs may be used in formative assessment to identify areas for improvement and in summative assessment to document achievement of TIC entrustability for graduation. Our institution did not have an assessment rubric that facilitated evaluation of students' TIC skills, and, to our knowledge, there is no published literature outlining steps to create such a rubric. To enable evaluation of students' TIC skills, we integrated TIC content into the school's existing HMS EPAs to create a novel TIC-inclusive assessment framework. We share our process to assist other institutions in creating new or adapted rubrics for assessment of their learners' TIC skills. Supplemental Digital Appendix 1 (at http://links.lww.com/ACADMED/B598) provides a list of supplemental sources for the development of assessment rubrics.

Approach

Aim and design

The committee aimed to develop an assessment rubric for medical student trauma-informed clinical skills. After establishing an HMS TIC Curricular Theme Committee in July 2019 and developing UME-appropriate TIC core competencies from July to December 2019 based on our institution's existing core competency domains (see Supplemental Digital Appendix 2 at http://links.lww.com/ACADMED/B598),[8] the committee used an iterative, multistage, consensus-building process for EPA development, modeled on the process described by Chen et

al.[9] To revise existing EPAs, the committee modified this process as follows: (1) evaluation of existing HMS and AAMC EPA content for TIC principles, (2) TIC content mapping to HMS EPAs and confirmation, (3) assurance of appropriate new TIC HMS EPA content with expert consultation, and (4) expert and stakeholder review (Table 1 and Supplemental Digital Appendix 3 at http://links.lww.com/ACADMED/B598).

Process

Table 1 delineates the timeline and content of each stage of our process, which is further described in the text. Each stage of this process was completed twice to increase the quality of the product through iterative review.

HMS and AAMC EPA content evaluation and revision. Two authors (L.R.I.M. and E.R.) comprehensively reviewed each HMS and AAMC EPA and characterized their key functions, identifying TIC content gaps in each HMS EPA using TIC competencies as a benchmark (see Supplemental Digital Appendix 4 at http://links.lww.com/ACADMED/B598). For example, HMS EPA 5 ("document a clinical encounter in the patient record") did not mention confidentiality or patient-preferred language; these missing components corresponded to TIC competencies 4 and 8 (see Supplemental Digital Appendix 2 at http://links.lww.com/ACADMED/B598). As outlined in Table 1, the committee then conducted an iterative process of adding descriptors of TIC skills to the EPAs, building on existing anchoring descriptions indicating preentrustable, emerging, and entrustable levels. To facilitate school-wide adoption of TIC-inclusive HMS EPAs, the committee preserved the original wording of the HMS EPAs, adding material rather than

altering words or subtracting from existing HMS EPAs. During 3 meetings from November 2021 to September 2022, 3 committee subgroups with a diversity of identities, training levels, specialties, disciplines, and medical education experience generated new TIC descriptors for each HMS EPA, then circulated these to other subgroups for review and feedback. Through 5 additional meetings from April to May 2023, the committee iteratively reviewed the materials until reaching consensus for content and pedagogy. Editing between committee meetings aimed to ensure semantic consistency and eliminate redundancy.

TIC content mapping to EPAs and confirmation. Following the work of ten Cate et al,[10] the committee mapped HMS EPAs onto an existing competency framework to delineate competencies needed to attain entrustability for each HMS EPA from November 2021 to September 2022 and April to May 2023 (Table 1). The committee mapped new TIC EPA content to the established HMS TIC competency framework (see Supplemental Digital Appendix 4 at http://links.lww.com/ACADMED/B598) and revised existing content or intercalated new content where appropriate. This process of checking alignment with the TIC competencies helped provide validation evidence of HMS EPA content.[9,10]

Assurance of new TIC EPA content with expert consultation. L.R.I.M. and E.R worked with 2 authors (J.P., N.-H.T.) who are codirectors of the TIC Curricular Theme Committee and who served as internal experts (September to October 2022 and June 2023; Table 1). Committee members then reviewed the content and alignment for clarity, simplicity of use, consistent semantics, observability, and measurability of each HMS EPA.

Expert and stakeholder review of TIC content. The committee sought feedback on the TIC-inclusive HMS EPAs from clinical faculty, course directors, UME deans, and medical education experts, including the former (founding) director of the school's OSCE program (October to November 2022 and June 2023; Table 1). These reviewers provided suggestions for incorporating the TIC-inclusive assessment framework in standardized patient encounters. Next steps include sharing TIC HMS EPAs with clinical clerkship directors and current OSCE directors to review. Thereafter, faculty educators could trial the framework during OSCEs and clinical interactions.

Outcomes

This process resulted in using 10 HMS TIC competencies to inform a revised assessment framework for all 13 HMS EPAs. Supplemental Digital Appendix 2 at http://links.lww.com/ACADMED/B598 presents the 10 HMS TIC competencies mapped to the 6 HMS competency domains. Figure 1 presents an example of 1 TIC-inclusive HMS EPA: "recommend and interpret common diagnostic and screening tests." The TIC competencies 2, 4, 8, and 9 (see Supplemental Digital Appendix 2 at http://links.lww.com/ACADMED/B598) were added to HMS EPA 6 as specific content in oral presentations about trauma-informed incorporation of trauma history, social determinants of health, social history, and patient identity. Supplemental Digital Appendix 4 (at http://links.lww.com/ACADMED/B598) includes the entire TIC-inclusive HMS EPA framework.

The newly created TIC-inclusive HMS EPAs follow a developmental sequence across preentrustable, emerging, and entrustable stages. Descriptors of typical preentrustable stages describe learners who do *not* demonstrate TIC principles in patient care (e.g., HMS EPA 6: "does not report trauma history or social determinants of health"). Emerging stages indicate a student uses TIC principles but does not apply them appropriately and consistently (e.g., HMS EPA 6: "reports trauma history or social determinants of health routinely, but does not link them to patient presentation"). In the entrustable stage, students correctly and reliably incorporate TIC principles into patient care (e.g., HMS EPA 6: "reports trauma history, including social determinants of health and sources of resilience, and ties them to patient presentation").

Each TIC-inclusive HMS EPA incorporates at least 1 relevant trauma-informed competency. Some competencies are represented in more than 1 HMS EPA (see Supplemental Digital Appendix 4 at http://links.lww.com/ACADMED/B598). The patient care competency ("in all aspects of patient care, apply a trauma-informed approach which includes the awareness that past or current trauma may contribute to patient presentation") maps to all 13 HMS EPAs. Next in frequency, the interpersonal and communication skills competency ("routinely apply trauma-informed principles in all aspects of communication [with patients, families, colleagues, and communities] and educate others on trauma-informed approaches") maps to 9 HMS EPAs (1A, 3, 4, 5, 6, 8, 9, 10, and 11), and the organizational and social determinants of health care competency ("examine the health care environment and recommend trauma-informed improvements in order to enhance patient safety and promote equitable care") maps to 6 HMS-EPAs (3, 6, 8, 10, 11, and 12). The medical knowledge competency ("define trauma and

describe the epidemiology of trauma, including how the prevalence and type of trauma vary by social position") is the only competency that does not map to any HMS EPA. Although foundational to all TIC-inclusive HMS-EPAs, this competency is more relevant to the basic science curriculum than to the clinically focused TIC HMS-EPAs.

Next Steps

This novel set of HMS EPAs provides a framework for assessment of TIC clinical skills. Schools may also use these EPAs in faculty development and program or curricular evaluation. To begin this process at HMS, the committee developed TIC resource materials for faculty and students and piloted the TIC-inclusive HMS EPAs within 1 school-wide OSCE. Next steps will involve broader use of the TIC-inclusive HMS EPAs within OSCE and clinical environments and collection of data from both students and faculty on the feasibility, acceptability, and impact of the TIC-inclusive HMS EPA set. Additional faculty development in how to teach and assess TIC clinical skills will be needed because most clinicians have had little training in TIC principles.[5]

Our study methods have several limitations. These EPAs were developed at 1 school in 1 location and may not be applicable in other settings. Furthermore, we do not yet have primary data to determine evidence of validity of the new HMS EPAs. Next steps will include a Delphi process, which could further enhance generalizability and help develop validity evidence based on EPA content. Notably, this HMS EPA revision process took significant time and effort, spanning approximately 18 months and involving many stakeholders, and it will require additional time to implement fully in curricula and pedagogy. This process also required

institutional salary support for committee faculty and staff time, although most faculty time was uncompensated. Adoption of TIC-inclusive EPAs at other institutions will require investment of resources to support their development and implementation.

In conclusion, we developed these TIC-inclusive HMS EPAs to enable assessment of students' trauma-informed skills to advance 2 aims: (1) that all students are trained to correctly and reliably incorporate TIC competencies into patient care and (2) that TIC is a standard for medical practice.[4] This project is a proof of concept that EPAs can be revised to be TIC inclusive. Our process yielded a trauma-informed, EPA-based assessment tool to provide a transparent and standardized assessment of learners. This framework enables assessments based on direct observation and anchored in a developmental sequence reflecting expected professional growth. Additionally, this framework can drive curriculum development[4] and faculty development. This work may facilitate the adoption of trauma-inclusive EPAs by other institutions to educate the next generation of physicians to practice TIC and thus promote a more accessible, safe, and equitable health care system.

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Figure Legend

Figure 1

An example of a trauma-informed care (TIC)–inclusive Harvard Medical School (HMS) entrustable professional activity (EPA): "recommend and interpret common diagnostic and screening tests." Italicized sections indicate those sections added by the committee to create a TIC-inclusive HMS-EPA. Abbreviations: ICS, interpersonal and communication skills; MK, medical knowledge; OS, organizational and social determinants of health care; PC, patient care.

[a]HMS EPAs incorporate the HMS TIC competencies (adapted from the National Collaborative on Trauma-Informed Health Care Education and Research competencies[8]) into its anchoring descriptions of observable and measurable actions that medical students might take at each stage of their training (preentrustable, emerging, and entrustable). This HMS EPA incorporates the HMS TIC competencies 2, 4, 8, and 9. The number refers to the competency as numbered in Supplemental Digital Appendix 2 (at http://links.lww.com/ACADMED/B598); the letters after the dash indicate the domain that competency is a part of as also described in Supplemental Digital Appendix 2 (at http://links.lww.com/ACADMED/B598).

Figure 1

Preentrustable	Emerging	Entrustable
Identifies order sets but cannot explain purpose. Identifies key tests for some common conditions. Misinterprets common results. Fails to recognize abnormal laboratory test results or respond to critical ones. Repeats tests at incorrect intervals. *Does not communicate test results to patients.* *Shows lack of respect for patients who decline medical advice of request nonindicated diagnostic and screening tests.*	Knows and finds normal common laboratory test results. Identifies key tests for common conditions. Gathers results and responds to critical ones with correct urgency and updates team. Begins to interpret abnormal findings for common tests and recommends next steps for patient care. *Communicates test results to patients, sometimes with delays that hinder advancing patient care or without acknowledging the patient's responses.* *Sometimes shows respect for patients who decline medical advice or request nonindicated diagnostic and screening tests.*	Correctly interprets abnormal laboratory test results for common tests and imaging and the effect on patient care. Identifies critical results with correct response and urgency. Recommends reliable, cost-effective, patient-centered screening and evaluation of common conditions. Routinely communicates results and recommendations *compassionately, in a timely manner, and using patient-centered language.* *Consistently shows respect for patients who decline medical advice or request nonindicated diagnostic and screening tests.*

Added TIC Competencies[a]	TIC2-MK; TIC4-PC; TIC8-ICS; TIC9-OS

Table 1
Process for Developing TIC EPAs for Medical Students at HMS[a]

Stage	Description	Timeline
Essential earlier stages		
Laying the groundwork	Identify student and faculty TIC champions, obtain endorsement from medical education leadership, identify gaps in and opportunities for TIC clinical skills assessment	July 2019
Development of HMS TIC competencies	Define TIC core competencies that HMS medical students should demonstrate on graduation	July 2019 to December 2019
EPA development process		
HMS and AAMC EPA content evaluation	Review EPAs and AAMC key functions for gaps in TIC assessment and add TIC skills within anchoring descriptions of EPAs and iteratively review for consensus	November 2021 to September 2022; April 2023 to May 2023
TIC content mapping to HMS EPAs	Align HMS TIC competencies from stage 1 with edited HMS EPAs from stage 2 and revise or intercalate where appropriate	November 2021 to September 2022; April 2023 to May 2023
Assurance of new TIC HMS EPA content	Enlist internal expert consultation and feedback for further refinement and assurance of new TIC EPA content	September 2022 to Oct 2022; June 2023
Expert and stakeholder review	Obtain feedback from external experts and administrative stakeholders on results of stages 2-4 and promote curricular integration of new content	October 2022 to November 2022; June 2023

Abbreviations: AAMC, Association of American Medical Colleges; EPA, entrustable professional activity; HMS, Harvard Medical School; TIC, trauma-informed care.

[a]This table describes the iterative, multistage, consensus-building process for EPA development used by the committee. Each stage of the EPA-development process was completed twice, which is denoted by the second set of dates listed after the semicolon for each stage in the timeline column.