The Graduate Medical Education Scholars Track: Developing Residents as Clinician–Educators During Clinical Training via a Longitudinal, Multimodal, and Multidisciplinary Track

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Abstract

Problem

Residency clinician–educator tracks have been created; however, they have generally been limited to a single discipline or program and experienced some challenges. The Graduate Medical Education Scholars Track (GMEST), an embedded longitudinal, multimodal, multidisciplinary clinician–educator track for residents, was piloted at the Pritzker School of Medicine, University of Chicago, in academic year 2014–2015.

Approach

The GMEST is a two-year experience completed during residency training. The goal is to prepare trainees for academic careers as clinician–educators with a focus on medical education scholarship. This track is designed for residents from diverse training programs with variable clinical schedules and blends a live interactive program, asynchronous instruction and discussion, and overarching multimodal mentorship in medical education. Participants are expected to complete a capstone medical education project and submit it to institutional, regional, and/or national venues.

Outcomes

Data gathered from the 2014–2016 and 2015–2017 cohorts demonstrated that 21/22 (95%) participants were satisfied with the GMEST curriculum, felt it was important to their development as future clinician–educators, and felt it would positively influence their ability to work in medical education. Further, 18/22 (82%) participants wished to pursue a career as a clinician–educator and in medical education leadership and/or scholarship.

Next Steps

The authors will longitudinally track graduates' future career positions, projects, publications, and awards, and cross-match and compare GMEST graduates with non-GMEST residents interested in medical education. Faculty mentors, program directors, and the Medical Education, Research, Innovation, Teaching, and Scholarship community will be asked for feedback on the GMEST.

Problem

Many residents aspire to become clinician–educators, a growing mechanism for success as an academic faculty member.[1,2] However, trainee understanding of this path is usually limited. Resident-as-teacher programs to develop teaching skills are common in graduate medical education (GME), but most lack an overview of a clinician–educator career, which is distinct from a career as a "clinician–teacher."[3] Proposed core competencies of clinician–educators encompass clinical teaching but also include competencies that are absent from many resident-as-teacher programs, including applying educational theory to practice, fostering educational leadership and expertise, and engaging in educational scholarship.[3,4] Additionally, the Accreditation Council for Graduate Medical Education highlights participation in scholarly activities as an expectation during training for all residency programs and specialties.[5]

Residency clinician–educator tracks have been designed to cultivate interest in these careers. However, such tracks have generally been limited to a single institutional discipline or training program.[6,7] This model may not be reflective of the actual practices of a clinician–educator whose career espouses collaboration across specialties and professions. Additionally, the tracks described in the literature, particularly those requiring significant dedicated time, clinical schedule modification, or extension of residency training, also describe threats to sustainability and efficacy that emerged.[6,7] Many such tracks are also reliant on in-person instruction, which is difficult for trainees already experiencing significant workload compression. To address these gaps and challenges, we developed the GME Scholars Track (GMEST), an embedded longitudinal, multimodal, multidisciplinary clinician–educator track for residents at the Pritzker School of Medicine, University of Chicago, in July 2013. In this Innovation Report, we describe the design and structure of and the preliminary results and challenges from the GMEST pilot in academic year 2014–2015.

Approach

Overview of the GMEST

The GMEST is a two-year experience completed during residency training at the Pritzker School of Medicine, University of Chicago. The goal of the track is to prepare trainees for academic careers as clinician–educators with a focus on medical education scholarship. The objectives of the track are that participants will:

- Participate in a dedicated longitudinal medical education track integrated within a broader medical education community.
- Identify and describe the steps of curriculum development and evaluation, and apply these skills to an individual medical education project.
- Be prepared for future careers as clinician–educators in medical education.

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We designed this track for residents from diverse training programs with variable clinical schedules. The track, therefore, uses a blend of components within three elements: a live interactive program, asynchronous instruction and discussion, and overarching multimodal mentorship in medical education (see Chart 1).

Institutional infrastructure and support

The Pritzker School of Medicine, University of Chicago, is an urban academic medical center with a long tradition and strong infrastructure for training leaders in medical education throughout the continuum. We designed the GMEST to align with this educational mission. Support for the GMEST is provided by the broader Medical Education, Research, Innovation, Teaching, and Scholarship (MERITS) fellowship program in medical education, which is a faculty development program in curriculum development, educational leadership, and scholarship. Under the leadership of the dean for medical education, MERITS provides oversight as well as administrative and financial support for the GMEST. The most significant expense related to the track is salary support for the track directors (J.A. and S.K.M.) for their curriculum development and delivery activities.

Setting and participants

In July 2014, the track was piloted with 5 residency programs (anesthesia, emergency medicine, internal medicine, general surgery, and pediatrics); in July 2015, we expanded the pilot to recruit from all 22 residency programs at the institution. Residents apply in January of the academic year preceding track entry, which means that for most four-year programs, application occurs during postgraduate year (PGY) 1 for participation in the GMEST during PGY2 and PGY3. For applicants from longer programs with dedicated academic or research years, we suggest they apply to matriculate to the track during the academic or research years. Applicants submit a CV and statement of interest and describe a potential medical education project with an identified faculty mentor. Applicants must obtain a letter of support from their program director supporting their full participation in the track. We limit acceptance to 10 to 12 participants each year to ensure that all participants receive high-quality feedback from the track directors.

Multimodal track curriculum

As noted above, the longitudinal curriculum for the GMEST comprises three elements: the live interactive program; asynchronous instruction and discussion; and overarching multimodal mentorship in medical education. Estimated resident time for participation varies for each track component (see Chart 1).

Live interactive program. The cornerstone of the live program is the quarterly meetings, which both junior (Year 1) and senior (Year 2) participants attend throughout the duration of the track. These meetings are dedicated to expert-mediated group discussions on topics of interest in medical education. As the track progresses, senior GME Scholars are called upon as the "experts" in these discussions for junior GME Scholars, sharing their experiences in mentor–mentee relationships, navigating project planning and implementation, and educational scholarship. This culminates in the summer quarterly meeting, which is a medical education journal club led by the senior participants. The live program leverages existing resources within the institution for inclusion in the GMEST. For example, eight or nine times a year, the Pritzker School of Medicine, University of Chicago, hosts a monthly Research and Innovation in Medical Education conference dedicated to presenting ongoing innovations in medical education, featuring both institutional and external educators and researchers; GME Scholars attend at least half of these conferences. Finally, one of the highlighted experiences of the track is the opportunity for direct observation of teaching skills, provided via the teaching consult service sponsored by the institution's Academy of Distinguished Medical Educators. Annually, GMEST participants select a specific teaching activity (e.g., morning report or rounds) to be observed by trained senior clinician–educators who provide immediate feedback.

Asynchronous instruction and discussion. The GMEST's asynchronous element centers on the completion of an interactive Webinar series on curriculum development and medical education scholarship, which has been previously described.[8] Junior GME Scholars are expected to view a six-part narrated Webinar series and complete corresponding discussion and reflection exercises, which are submitted to medical education mentors by preestablished deadlines and evaluated based on specific learning objectives for each Webinar.[8] The track directors also host online real-time group discussions of Webinar content; senior GME Scholars, who completed the Webinar series during their first year, are invited to contribute to these discussions as well. Finally, all GMEST participants are provided an electronic copy of *Curriculum Development for Medical Education: A Six-Step Approach* (Kern et al. Baltimore, MD: Johns Hopkins University Press; 1998) for self-directed learning on the Webinar material and as a reference guide.

Overarching multimodal mentorship in medical education. Mentorship in medical education is provided through multiple mechanisms (Chart 1). GMEST participants receive project-specific mentorship via work with their individual project mentors. They are also engaged within the broader MERITS community via Webinar discussions and reflection exercises. In these exercises, participants are asked to apply concepts introduced in the Webinars to their own scholarly project (e.g., writing goals and objectives for their project), and they receive individual feedback on their discussion and reflection exercises from MERITS-trained faculty members. Participants also receive substantial mentorship from the track directors with whom they meet regularly to discuss their progress. Finally, as described in the live and asynchronous elements, woven throughout the track are graduated opportunities for senior GME Scholars to serve as near-peer mentors for junior participants through quarterly meetings, Webinar online group discussions, and journal club.

Medical education project and scholarship

The capstone of the GMEST is participants' design and implementation of a medical education project; the majority of these projects are curriculum based for the participants' respective residency programs. This longitudinal experience over the participants' two

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Chart 1

Longitudinal, Multimodal Curriculum of the Graduate Medical Education Scholars Track, Pritzker School of Medicine, University of Chicago, Developed in July 2013

Track element	Track component	Junior GME Scholars (year 1)	Senior GME Scholars (year 2)	Estimated resident time for participation
Live interactive program	Quarterly meetings	Group interaction and discussions of scholarly projects with invited experts (including some senior GME Scholars) for varying topics of interest[a]		Four 1-hour meetings per year of participation
	Journal club	Participate in journal club	Lead and facilitate journal club	Occurs during the summer quarterly meeting
	Monthly RIME conferences	Attend at least half of the 8 or 9 conferences each year		Monthly 1-hour conferences
	Teaching consult service[b]	Have one teaching activity per year directly observed		Varies depending on teaching activity, but approximately 1–2 hours per year
Asynchronous instruction and discussion	Webinar series[c]	Complete Webinar series and corresponding discussion and reflection exercises	N/A	View six 10- to 20-minute Webinars throughout year (two Webinars at a time, three times per year) and complete corresponding discussion and reflection exercises (estimated 45–60 minutes for full completion of each set of Webinars)
	Webinar online group discussions	Opportunity for additional explanation or clarification of Webinar content and discussion and reflection exercises	Invited to participate to offer experience and expertise after having completed the Webinar series	Three 1-hour online discussions per year
	Self-directed learning	Electronic copy of *Curriculum Development for Medical Education: A Six-Step Approach* (Kern et al. Baltimore, MD: Johns Hopkins University Press; 1998) provided to all participants		Varies depending on participant
Overarching multimodal mentorship in medical education	Individual scholarly project mentorship	Longitudinal participation throughout track	Longitudinal participation throughout track Poster presentation at year-end graduation celebration	Varies depending on individual scholarly project Three-hour graduation ceremony with poster session in second year
	Medical education mentorship	Directed feedback from trained faculty on Webinar completion and application to individual scholarly projects	Continued engagement with mentors and in institutional medical education community	Included in the completion of Webinar discussion and reflection exercises as described above
	Track director mentorship	Regular meetings with GME Scholars Track directors		At least one 30-minute meeting per year Additional meetings as needed by request of resident or track director
	Near-peer mentorship	Encourage collaboration and discussion within and between cohorts	Lead and facilitate later quarterly meetings, including journal club, and contribute to Webinar online group discussions	Encompassed within components described above Additional time for preparation varies by participant

Abbreviations: GME indicates graduate medical education; RIME, Research and Innovation in Medical Education; N/A, not applicable.
[a]Topics from 2014 to 2017 (to date) have included navigating successful mentor relationships, history of medical education, social media and medical education, a panel discussion on careers in medical education with invited institutional leaders in medical education, and opportunities and pitfalls in project design and implementation.
[b]Sponsored by the Pritzker School of Medicine, University of Chicago, Academy of Distinguished Medical Educators.
[c]This Webinar series is interactive, is on curriculum development and medical education scholarship, and has been described elsewhere.[8]

years in the track is woven throughout the live, asynchronous, and mentorship elements. The project allows learners a practical environment to apply taught principles of curriculum development, evaluation, and learning theory. Scholarship and dissemination is a track focus as well; we strongly encourage participants to submit their project to institutional, regional, and/or national venues. However, acceptance of their project is not required for graduation. The participants' individual project mentors and track directors provide regular and continuous project oversight and mentorship. As a requirement for track completion, senior GME Scholars present the results of their projects in a dedicated poster session during the graduation ceremony for the GMEST and MERITS fellowship.

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Faculty requirements

The time commitment for GMEST faculty varies based on the different roles. The track directors receive time and salary support, and spend approximately two to five hours weekly in their roles. Medical education mentors who provide feedback on Webinar discussion and reflection exercises do so at three prespecified times per year. Finally, individual project mentor time varies depending on the project, but these faculty members commit to providing mentorship throughout their mentee's two years in the track.

Participant and program evaluation

We evaluated participants' completion of the track based on their live program attendance, timely and satisfactory completion of the Webinars and accompanying exercises, and the design and implementation of their individual medical education project.

For programmatic evaluation, we employed the Yardley and Dornan[9] interpretation of the Kirkpatrick framework, which has been previously described in evaluating residency tracks.[10] For information on the data we used or plan to use to evaluate each Kirkpatrick level, see Table 1.

The University of Chicago Institutional Review Board granted an educational exemption for the evaluation of the GMEST.

Outcomes

Baseline data, collected via SurveyMonkey (San Mateo, California) at matriculation to the program, for the 22 residents from the initial two GMEST cohorts (July 2014–June 2016 and July 2015–June 2017; hereafter, the 2014–2016 and 2015–2017 cohorts), demonstrated limited experience with medical education curriculum design and medical education scholarship. Only 5/22 (23%) had prior training in curriculum design, and only 7/22 (32%) reported prior scholarship related to medical education.

For Kirkpatrick Level 1 (participation), 32 residents from 10 different residency programs have matriculated into the GMEST over three years (11, 11, and 10 residents in 2014, 2015, and 2016, respectively). All residents from the 2014–2016 cohort have successfully

Table 1

Program Evaluations of Kirkpatrick Outcomes for the Graduate Medical Education Scholars Track, Pritzker School of Medicine, University of Chicago, 2014–2017

Kirkpatrick levels, as interpreted by Yardley and Dornan[9]	Program evaluation
1—Participation	Number of residents enrolled
2a—Attitudes	End-of-program satisfaction data
2b—Knowledge and skills	Quarterly assignments (e.g., satisfactory Webinar completion)
3—Behavior	• Completion of capstone medical education projects • Next career positions of participants
4a—Organizational practice	• Future impact of capstone medical education projects and scholarship • Future projects, publications, and awards of participants
4b—Benefits to patients	Future careers of participants

Source: Yardley S, Dornan T. Kirkpatrick levels and education "evidence." Med Educ. 2012;46:97–106.

Table 2

Scholarship and Next Career Position Outcomes for Graduate Medical Education Scholars Track Participants From the 2014–2016 and 2015–2017 Cohorts,[a] Pritzker School of Medicine, University of Chicago

Resident's cohort and specialty	Next career position	Scholarship from capstone medical education project, type (number)[b]
2014–2016 cohort		
Emergency medicine	Medical education fellowship	Poster (3), manuscript accepted (1)
Internal medicine	Chief resident and rheumatology fellowship	Poster (1), manuscript under review (1)
Anesthesia	Critical care fellowship	Poster (1)
Emergency medicine	Emergency medicine and private-sector health care practice	Poster (1)
Pediatrics	Chief resident	No
General surgery	Colorectal surgery fellowship	No
Internal medicine	Pulmonary and critical care fellowship	Poster (1), letter to the editor (1)
General surgery	Pediatrics surgery fellowship	Poster (1)
Pediatrics	Pediatrics general practice	No
Pediatrics	Pediatrics general practice	No
Surgery	Surgical oncology fellowship	Poster (1)
2015–2017 cohort[c]		
Urology	N/A	Poster (1), manuscript published (1)
Medicine–pediatrics	N/A	Poster (1)
Internal medicine	N/A	None to date
General surgery	N/A	None to date
Emergency medicine	N/A	Poster (1), manuscript under review (1)
Obstetrics–gynecology	N/A	None to date
Psychiatry	N/A	None to date
Pediatrics	N/A	None to date
Internal medicine	N/A	Poster (1)
Pediatrics	N/A	None to date
Emergency medicine	N/A	None to date

Abbreviation: N/A indicates not available.
[a]Per data provided to the authors on July 16, 2016.
[b]Scholarship and dissemination is a track focus; participants are strongly encouraged to submit their project to institutional, regional, and/or national venues. However, acceptance of their project is not required for graduation.
[c]This cohort has not yet finished the program.

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completed the track, and as of January 2017, 21 residents are currently enrolled in the GMEST.

End-of-program satisfaction data (Kirkpatrick Level 2a) from the 2014–2016 and 2015–2017 cohorts, gathered via electronic survey (SurveyMonkey) at the end of each cohort's first year of the program, demonstrated that 21/22 (95%) participants (1) were satisfied with the GMEST curriculum, (2) felt the GMEST was important to their development as future clinician–educators, and (3) felt the GMEST would positively influence their ability to work in medical education. Furthermore, 19/22 (86%) participants would recommend this program to future learners. Additionally, attitudes (Kirkpatrick Level 2a) from the same two cohorts demonstrated that, after participating in the GMEST, 18/22 (82%) participants wished to pursue a career as a clinician–educator, and the same number wished to pursue a career in medical education leadership and/or scholarship. All participants had satisfactory Webinar completion and application of mentor feedback on discussion and reflection exercises to their scholarly projects, based on the specific learning objectives and criteria for the Webinar as published in MedEdPORTAL, which served as proof of conceptual knowledge of curriculum design and scholarship (Kirkpatrick Level 2b).[8]

Demonstrating behavioral outcomes (Kirkpatrick Level 3), all 11 residents from the 2014–2016 cohort completed their capstone medical education projects. These participants created unique curricula and presented novel results that incorporate concepts taught through the GMEST, demonstrating transfer of learning to the work environment. Additionally, all finished projects have demonstrated participant acceptance, improvement, or behavioral change, indicating that the track has produced a positive impact on scholarly productivity for our graduates (Table 2). These early results imply a promising trajectory for the GMEST; we will use further longitudinal data of our graduates' productivity and impact over time to evaluate Kirkpatrick Level 4a and 4b (organizational practice and benefits to patients) outcomes.

Next Steps

Understanding of the career path of clinician–educators is limited.[3,4] The GMEST, an embedded longitudinal, multimodal, multidisciplinary clinician–educator track, attempts to address the paucity of medical educator training in GME and to provide residents interested in this pathway with an opportunity to participate in an incubator program for budding medical educators.

While this program has had a successful pilot, there are several barriers to streamlining this track, and we encountered a few challenges. As residents are busy clinically, participants can find attendance and timely completion of assignments to be challenging. Our hope is to find an optimal schedule for the live program based on participant feedback and to make enhancements to the asynchronous element to maximize participation.

Additionally, track inception and maintenance required a collection of mentors with expertise in medical education; identification of these mentors did prove to be challenging. For us, the Pritzker School of Medicine, University of Chicago, MERITS fellowship program has been a valuable resource in developing a community of faculty with expertise in medical education. We intend to use this faculty development program as a continually renewing source of mentorship for GMEST participants.

Moving forward, we aim to gather Kirkpatrick Level 4a and 4b outcomes by measuring our graduates' impacts. We will longitudinally track graduates' future career positions, projects, publications, and awards, and cross-match and compare our graduates with residents who are interested in medical education but who did not participate in the GMEST. Additionally, to triangulate our data, we will gather feedback about the track's value and contributions from faculty mentors, program directors, and the MERITS community.

An embedded longitudinal, multimodal, multidisciplinary track curriculum for residents interested in medical education is not only feasible but, in our experience, has been perceived as valuable and demonstrative of behavioral change. Our aspiration is for the GMEST to provide opportunities and training to develop future scholars and leaders in medical education, and to become a pipeline for clinician–educators.

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Ethical approval: This program was granted exemption for evaluation efforts by the University of Chicago Institutional Review Board.

Previous presentations: Pilot results from this program were presented in a poster format at the Association of American Medical Colleges (AAMC) Annual Meeting, Baltimore, Maryland, November 10–12, 2015, and in an oral presentation format at the AAMC Central Group on Educational Affairs Meeting, Ann Arbor, Michigan, April 6–8, 2016.

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