

Pursuing Excellence: Integrating Clinical Learning Environment Staff and Learners Into the Pursuit of Quality, Safety, Equity, and Value

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This article is the third in a 6-part series to chronicle the processes, work, and outcomes of the ACGME Pursuing Excellence Pathway Innovators Project. These articles provide an overview of the project, detail the 4 drivers developed to define the project, and present the evaluation process developed. This article highlights initiatives that integrate health system learners into quality, safety, equity, and value processes of health care organizations.

While the National Academy of Medicine's *To Err Is Human*¹ and *Crossing the Quality Chasm*² ushered in a new focus on quality and safety, and *Unequal Treatment*³ focused on health disparities, the ACGME Clinical Learning Environment Review (CLER) Program centered the importance of these principles in the clinical learning environment (CLE).

The CLER Program, developed in 2012, increased the focus on Sponsoring Institutions' engagement of residents and fellows in quality improvement and patient safety within the CLE.⁴ The new focus was in part motivated by literature describing wide variations in care for standard practices, value-based care, and patient outcomes for similar conditions across geographic regions and health care systems. Layered on this is a growing body of literature demonstrating that residents and fellows who practice in health systems with greater attention to high-quality care delivery carry these behaviors forward into practice, and therefore their patients may experience better health outcomes.⁵

The first *CLER National Report of Findings* published in 2016 highlighted significant variation between institutions in the degree to which learners

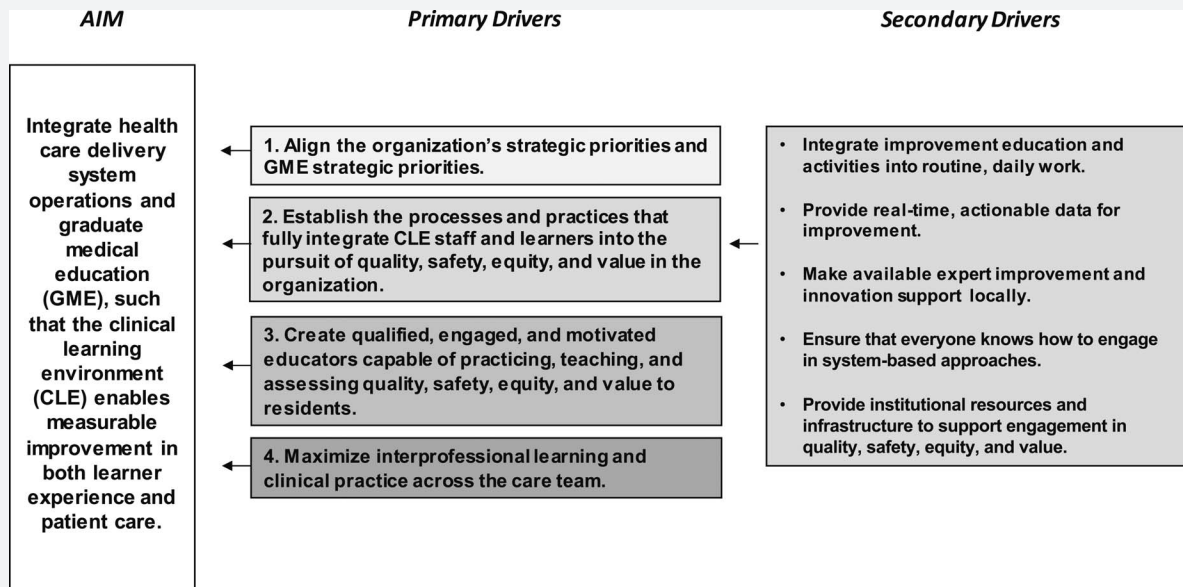
meaningfully engaged in activities related to quality, safety, equity, and value.⁶ For example, although residents were often aware of institutional quality priorities, they often defaulted to existing solutions and/or guidelines, rather than using knowledge and skills to develop and apply new approaches. Residents' improvement work was often siloed by profession and department, with limited engagement in interprofessional teams. Specific improvement efforts identified by residents related to disparities focused on provision of services to low-income or marginalized populations, rather than linking quality to equity. Robust programs to engage residents and fellows in identifying and reducing local disparities were lacking. Lastly, a lack of experiential engagement in patient safety at all levels was observed, from frontline incident reports to high-level engagement with service- and institution-specific safety priorities.

The *Pursuing Excellence in Clinical Learning Environments* initiative (*Pursuing Excellence*) was created to address the variation across Sponsoring Institutions identified in the *CLER National Report of Findings 2016* by testing innovations as part of a longitudinal social learning model. A core activity of *Pursuing Excellence* was the establishment of the Pathway Innovators Collaborative with the aim of enhancing the integration of graduate medical education and the health care delivery system to enable measurable improvement in patient outcomes and learner experience.⁷ Through a competitive application process 8 diverse Sponsoring Institutions,⁸ varying in size and governance structures, were selected to participate in the Pathway Innovators Collaborative. Their charge was to work within their organizations and across Sponsoring Institutions to create sustainable and adaptable projects and processes that could improve the CLE and be shared with the entire GME learning community. This article provides a detailed perspective on the second of 4 major areas of work within the Pathway Innovators Collaborative.

DOI: <http://dx.doi.org/10.4300/JGME-D-21-00197.1>

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Editor's Note: The ACGME News and Views section of JGME includes data reports, updates, and perspectives from the ACGME and its review committees. The decision to publish the article is made by the ACGME.



FIGURE

Pursuing Excellence Pathway Innovators Collaborative Driver Diagram Focused on Primary Driver 2 and Related Secondary Drivers

The Driver Diagram and Driver 2

Four primary drivers for improvement of the CLE for residents and fellows were identified to guide the Collaborative. These primary drivers included focusing on alignment of the CLE and GME, engaging residents and staff in quality, safety, value, and equity, faculty development, and interprofessional learning. All of these primary drivers included multiple secondary drivers (see FIGURE). Half of the teams began by focusing their initial efforts on Driver 2, “Establish the processes and practices that fully integrate clinical learning environment staff and learners into the pursuit of quality, safety, equity, and value in the organization.” This approach reflects the growing recognition of health systems science that complements and synergizes with traditional basic and clinical sciences. All 8 sites met through sequential learning sessions, including in-person site visits, guided by a 4-year curriculum to refine their innovations.

Considerations for Advancing Driver 2

The Collaborative teams noted several factors to consider for implementation of Driver 2. A key factor was that patient safety and quality improvement work often relied on established nursing unit-based structures. The transient nature of residents was not conducive to a shared learning experience. While residents commonly rotate through units, they are not a permanent part of the unit-based team, and may work on multiple rotations across units, in some cases

across multiple hospitals. Also, many units held quality or safety huddles at set times to review institutional and local metrics, and residents were often not aware of those huddles or able to attend due to other clinical or educational obligations. The lack of integrated resident and unit-based quality and safety work could result in projects at risk of not being sustained after a resident rotated off-service or graduated.

An additional factor was lack of improvement expertise available at the point of care where residents work. Many institutions have improvement experts charged with overseeing institutional improvement initiatives (ie, Operational Excellence, Lean Transformation); however, that expertise was often not known or available to residents. Likewise, residents and fellows often did not know what quality data were routinely collected or how to access these data to drive improvement. Recognizing these challenges, the Collaborative undertook the work of implementing and sustaining an infrastructure that aligned and integrated learners with staff through a specified set of action steps articulated below.

A Focus on the Secondary Drivers

Each of the Collaborative teams utilized the secondary drivers of the Driver Diagram to begin the journey toward integrating residents and fellows in the quality, safety, value, and equity mission of the Sponsoring Institution. Notably, the Collaborative found it more practical and logical to approach the

secondary drivers in the reverse order on the driver diagram. Articulated below is how the teams implemented each of the secondary drivers, presented in the sequence we propose for future use. To make progress, some overlap will likely be required. Specific examples of team approaches are in the TABLE.

Secondary Driver: Provide Institutional Resources and Infrastructure to Support Engagement in Quality, Safety, Equity, and Value

Obtaining institutional resources and infrastructure to engage residents into quality, safety, equity, and value work is foundation to successful integration. This requires demonstrating a return on investment, allowing health system leaders to see this work as mission critical to health care delivery. Resources and infrastructure not only come in the form of leadership buy-in, but also in staff to support the work of engaging residents. The participants noted that this work can be both an educational and a clinical priority for the institution. One important way that alignment was achieved in the Collaborative was the explicit involvement of institutional leaders on each Pathway Innovators Steering Committee. This helped institutional leaders gain better understanding of the work of graduate medical education and promote and shape institutional strategies. Residents and fellows can identify challenges and become important allies to identify and solve systemic problems. In addition, each participating team created a business plan to gain buy-in from the C-suite by demonstrating the return on investment of meaningfully preparing faculty to effectively integrate residents, as well as other staff, into institutional improvement efforts. Interprofessional quality and safety initiatives were amplified and strengthened with broader participation. Bringing groups together helped standardized work and contributed to other efforts to improve patient outcomes, including length of stay, discharge planning, and interprofessional teamwork.

Secondary Driver: Ensure That Everyone Knows How to Engage in Systems-Based Approaches

A key element of success is ensuring that residents are not only *aware of*, but that they *engage in* health system-level approaches to improving quality, safety, value, and equity. The participants noted that it is especially important to ensure maximal impact and alignment of resident work with that of the health system. While many of the Collaborative organizations use Lean process improvement to drive transformation, residents were often an afterthought in the design of institutional improvement activities. The Collaborative helped institutional leaders reassess

their Lean process improvement activities to include residents and fellows so they are able to enact changes that can improve patient care, interprofessional learning, and participation. These changes can be embedded into the system and thereby sustained after residents graduate. For example, several of the teams (Cleveland Clinic, Maine Medical Center, UCSF, University of Chicago, and University of Rochester) specifically integrated residents into existing systems-based improvement work using Lean transformation teams and Operational Excellence so that all residents learn and apply the institutional approach to quality improvement (TABLE).

Secondary Driver: Make Available Expert Improvement and Innovation Support Locally

Local expertise, including coaches, can be an important and practical approach to successfully training residents to engage in institutional quality, safety, equity, and value work. Institutions developed models which fit with their existing institutional frameworks. Examples include bringing together groups of learners and frontline providers with institutional improvement experts (Rochester) and training a cadre of interprofessional faculty coaches to support ongoing trainee-led improvement work (Cleveland Clinic, UCSF). Some Collaborative teams used in-situ simulation to do this (Children's National), while others trained faculty to lead quality improvement discussions in the context of rounds (Our Lady of the Lake).

Secondary Driver: Provide Real-Time, Actionable Data for Improvement

Health care quality pioneer Ernest A. Codman, MD, stated, "To effect improvement, the first step is to admit and record the lack of perfection."⁹ Residents are accustomed to receiving subjective feedback about their clinical performance. They may be less likely to receive or understand their patient outcomes for a variety of reasons, including lack of data and lack of appreciation of their own impact.¹⁰ Two key elements to consider when providing outcomes data are the extent to which the data are timely and actionable.¹¹ In many large programs, residents rotate between services, units, and even health systems on a monthly basis. If residents are to change their own behavior based on data, they must receive data while they are still on the rotation. It's not necessary they receive their *own individual* data, as residents are members of teams affecting the care of a patient. However, at a minimum, they should have benchmarks to understand what they should aim to achieve.

Residents should view the data as actionable (eg, residents' behavior changes may reasonably result in

TABLE
Steps to Integrate Residents and Fellows Into Institutional Quality Mission in *Pursuing Excellence* Initiative

Pathway Innovator Team	Institutional Resources and Infrastructure to Support Engagement	Ensure Everyone Knows System-Based Approaches	Make Improvement Support Available Locally	Provide Real-Time Actionable Data for Improvement	Integrate Improvement Education Into Routine Daily Work
University of Chicago Medicine	Leaders recruited in Operational and Clinical Excellence to engage trained experts to support resident improvement.	Standard PGY-1/-2 curricula to introduce institutional approaches to these areas also made available to faculty with CME credit.	Coaching models support improvement teams at local and institutional levels (IGNITE); Train-the-trainer model for faculty and clinicians (ECLIPSE)	Residents and fellows granted access to the institutional quality metric dashboard. Service-line scorecards created and customized for resident teams.	Incorporate best-practice systems improvements from teams into daily activities across all teams (multidisciplinary rounds and bedside rounds).
University of California, San Francisco (UCSF)	REFLECT Project engages with existing leadership and education within UCSF's continuous improvement team to align curricula and create shared visibility.	Project leaders attend workshops focused Lean, A3 thinking, and visual management; Curricula available to all UCSF GME programs.	Project groups identify faculty leads and have optional coaches outside their program/division. Projects aligned with UCSF Health initiatives receive additional administrative support.	Projects are displayed on visual management boards to ensure that all members of the team have easy access to the data.	Project leaders are on the frontlines of care delivery, and therefore are intentional about designing interventions that can easily be integrated.
Cleveland Clinic	Built on existing infrastructure and established program (SolVE) to fully engage trainees in QI.	SolVE is an interprofessional 12-week program that applies QI. Twenty-three resident-led teams completed SolVE focused on transitions of care. Surgery residency designed mini-SolVE (5 wk) for their program.	Development and implementation of a new ToC Note within our electronic medical record system (EPIC); rolled out June 2019 led by a Pursuing Excellence taskforce.	All SolVE project outcomes and lessons learned are presented in a quarterly report. Some SolVE projects have been published or presented at Patient Safety Day.	GMEC QIPS and assessment subcommittees will work with clinical services to identify ways to observe, evaluate, monitor, and improve ToCs.
Maine Medical Center	Housestaff Quality and Safety Committee assigned a reporting relationship to the GMEC to enhance institutional commitment for iPACE. Operational Excellence team focused on unit-based interprofessional QI work.	Developed "Patient Safety Quality Improvement" web-based curriculum mandatory for all residents and fellows with companion faculty mentoring guide.	Engaged residents in unit-based Operational Excellence initiatives to develop relevant Key Performance Indicator (KPI) goals for iPACE unit.	KPIs are tracked in real time at the unit level, with support from the institutional Operational Excellence team.	Interprofessional QI education into unit-based IPE sessions, as well as unit-based Operational Excellence work. iPACE retreats and media resources developed to spread understanding and acceptance of iPACE principles.

TABLE
Continued.

Pathway Innovator Team	Institutional Resources and Infrastructure to Support Engagement	Ensure Everyone Knows System-Based Approaches	Make Improvement Support Available Locally	Provide Real-Time Actionable Data for Improvement	Integrate Improvement Education Into Routine Daily Work
Our Lady of the Lake Regional Medical Center	Developed an integrated and accountable committee with membership from GME and hospital operations ensuring alignment with hospital priorities.	Provided required "Lake LEAN" program for GME aligned with intra-department QIPS curricula. Education reinforced by real-time "QI on the Fly" intervention.	Hospital operations and GME provided coaching support for frontline interdisciplinary team huddles; huddles focused on QIPS and daily improvement.	Core hospital metrics were imbedded within "QI on the Fly" digests; sustainment plan: refining dynamic dashboards (Tableau and EPIC reporting).	Interdisciplinary team huddles occur daily. "QI on the Fly" discussion of QIPS has become standard work for all huddles.
University of Rochester Medical Center	An interprofessional leadership team met weekly to drive PEI project goals. Trainees were added to establish unit-based improvement teams.	All trainees required to complete institutional curriculum. Content also used to train physician, nurse, and coach leaders of PEI teams.	Appointed trainees to longitudinal positions on 45 in/outpatient improvement teams with local interprofessional leadership and QI coaches.	All PEI teams provided project data support. Institutional, departmental, and clinical performance data access/use improved significantly with PEI.	Unit goals and metrics prominently displayed. All faculty, staff, and trainees engage daily in activities to support rapid-cycle improvements.
Dell Medical School at The University of Texas at Austin (Dell Seton Medical Center)	"I'm in!" campaign centered on safety, affordability, well-being, and experience; Distinction Program for Care Transformation; online QI project platform created.	Modules (Aim4Excellence/ Discovering Value-Based Health Care); Bridges to Better Care (B2BC); Patient Safety Teaching Champions; and Value Director Dyads.	QI ideas chosen by the "Shark Tank" of the B2BC crowdsourcing program (supported by QI-trained faculty) are implemented and disseminated.	Residents and fellows provided access to the institutional dashboards (Tableau and Vizient), which are also displayed on all the units.	Residents participate on performance and rapid cycle teams, root cause analysis committees, and performance improvement projects.
Children's National Medical Center	Simulation program and e-Learning program developed modules and interprofessional trainings on safety and error analysis that institutional leadership mandated.	Developed and delivered a blended training experience hospital-wide with a web-based module followed by in-person interprofessional simulations for frontline clinicians.	Post-training, performance improvement team collaborated frequently with local teams in apparent cause analyses to engage and identify solutions.	Pediatric Residency Safety Council participated in institutional apparent and root cause analyses. Data presented to residents at core systems improvement conferences.	Identified solutions and best practices from these apparent cause analyses were instituted by GME trainees into daily clinical work.

Abbreviations: PGY, postgraduate year; CME, continuing medical education; GME, graduate medical education; QI, quality improvement; ToC, table of contents; GMEC, Graduate Medical Education Committee; QIPS, quality improvement and patient safety; IPE, interprofessional education; PEI, Pursuing Excellence Initiative.

outcome changes). One can identify examples in which the link is linear (eg, timely removal of Foley catheters leads to fewer CAUTIs) or less linear (patients filling their post-discharge medications may depend on factors that are both within and beyond the trainees' control). Teams noted that faculty (physicians or non-physicians) need to be equipped to help residents understand how to interpret and contextualize data to drive behavior change which leads to better patient outcomes. In the collaborative, this often meant close alignment with the chief quality officer or quality staff to provide residents with access to existing quality dashboards or designing and deploying new ones.

Secondary Driver: Integrate Improvement Education and Activities Into Routine Daily Work

As checklists, backup processes, and other types of improvement work have become "standard work," health care systems have come to depend on non-physician clinicians and staff to ensure that best practices are followed. Examples include having operating room nurses take responsibility for time outs or clinical pharmacists review medication orders for safety. Clinical educators can take advantage of teaching opportunities to focus on topics such as improvement science, rounding on visibility boards, or interprofessional collaboration. Faculty can role model how these systems-based topics are integrated into daily practice, rather than being viewed as an "add-ons." For example, at Dell Medical School, faculty on one of their medicine teams, named the "Green Team," test innovations in care while on service with their learners.

Conclusions

The Pathway Innovators experience demonstrates that the secondary drivers can be used to guide integration of residents and fellows into the quality, safety, equity, and value mission of the Sponsoring Institution. Our experience was that the order of the steps mattered. In fact, for many participants, we found the ideal order was the reverse of how the secondary drivers were originally presented. It is important to note that to make progress, secondary drivers may need to be addressed concurrently, as appropriate to the institution or activity.

While provision of resources and infrastructure are foundational, governance of most institutions was not designed to account for residents, making it harder to solicit support and create authentic roles for residents. Ironically, newer institutions may have an advantage because they can prospectively design systems to meaningfully integrate residents.

Going forward, all institutions should be challenged to rethink CLEs to ensure that residents and fellows receive experiential learning not only in clinical care but also in the topics of quality, safety, equity, and value foundational to health systems science. For example, existing clinical rotations can be redesigned to incorporate a focus on systems-based practice, as a value add for the health system and for patient care. While documenting the impact of residents on quality, safety, equity, and value has been done and can be labor-intensive, measuring outcomes and return on investment is critical to sustainability and long-term commitment of resources.

Perhaps most importantly, residents and fellows must also see the value in this integration. With increased workload and attention to well-being and burnout in training, faculty are obligated to demonstrate why quality, safety, equity, and value matter for patients, as well as for physician professional satisfaction and development. Leveraging external pressures can be a strategy for institutions to meaningfully engage residents and fellows.

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